Computer algebra independent integration tests
2_Exponentials/2.3_Exponential_functions

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Contents

1 Introduction

This report gives the result of running the computer algebra independent integration problems. The listing of the problems are maintained by and can be downloaded from Albert Rich Rubi web site.

1.1 Listing of CAS systems tested

The following systems were tested at this time.

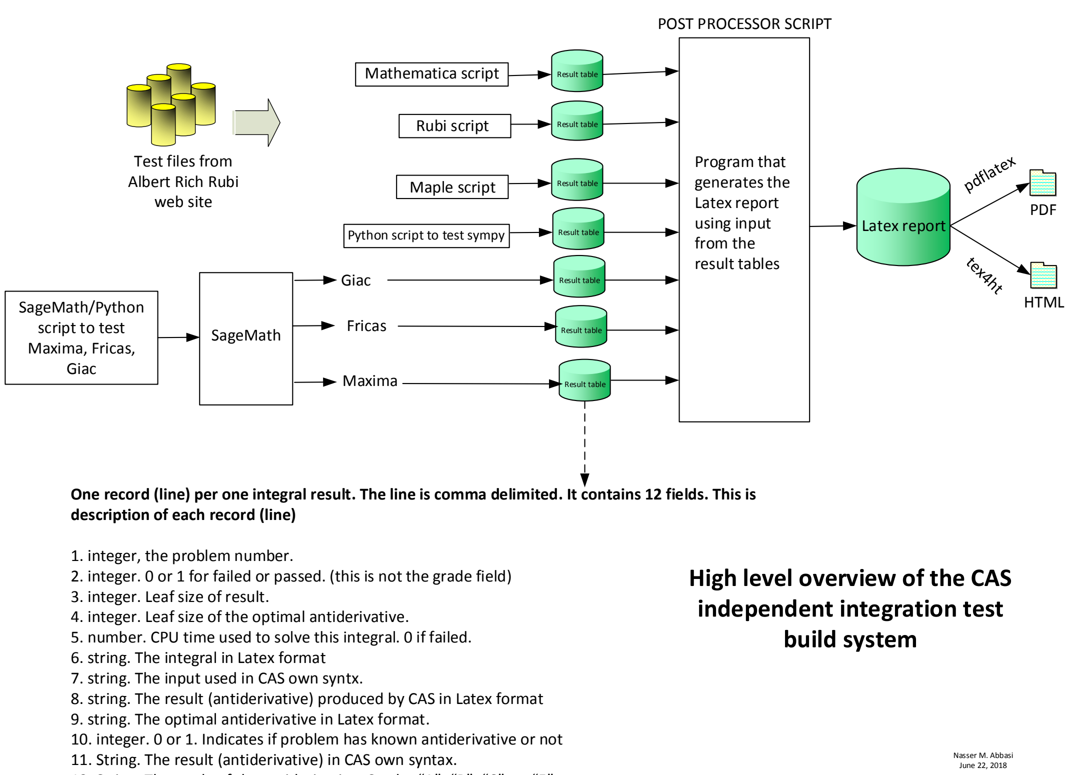
1. Mathematica 11.3 (64 bit).
2. Rubi 4.15.2 in Mathematica 11.3.
3. Rubi in Sympy (Version 1.3) under Python 3.7.0 using Anaconda distribution.
4. Maple 2018.1 (64 bit).
5. Maxima 5.41 Using Lisp ECL 16.1.2.
6. Fricas 1.3.4.
7. Sympy 1.3 under Python 3.7.0 using Anaconda distribution.
8. Giac/Xcas 1.4.9.

Maxima, Fricas and Giac/Xcas were called from inside SageMath version 8.3. This was done using SageMath integrate command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly using Python. Rubi in Sympy was also called directly using sympy 1.3 in python.

1.2 Design of the test system

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



1.3 Timing

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

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

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

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

1.4 Verification

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

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

1.5 Important notes about some of the results

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

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

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

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

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

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

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

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

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

Important note about FriCAS and Giac/XCAS results There are Few integrals which failed due to SageMath not able to translate the result back to SageMath syntax and not because these CAS system were not able to do the integrations.

These will fail With error `Exception raised: NotImplementedError`

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

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

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

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

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

```
#see https://stackoverflow.com/questions/25202346/how-to-obtain-leaf-count-express

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

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

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

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

  except Exception as ee:
         leafCount =1
```

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

1.6 Grading of results

The table below summarizes the grading of each CAS system.

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

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

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

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

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

System	solved	Failed
Rubi	% 99.74 (755)	% 0.26 (2)
Rubi in Sympy	% 82.69 (626)	% 17.31 (131)
Mathematica	% 93.79 (710)	% 6.21 (47)
Maple	% 81.11 (614)	% 18.89 (143)
Maxima	% 63.28 (479)	% 36.72 (278)
Fricas	% 89.3 (676)	% 10.7 (81)
Sympy	% 40.03 (303)	% 59.97 (454)
Giac	% 43.86 (332)	% 56.14 (425)

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

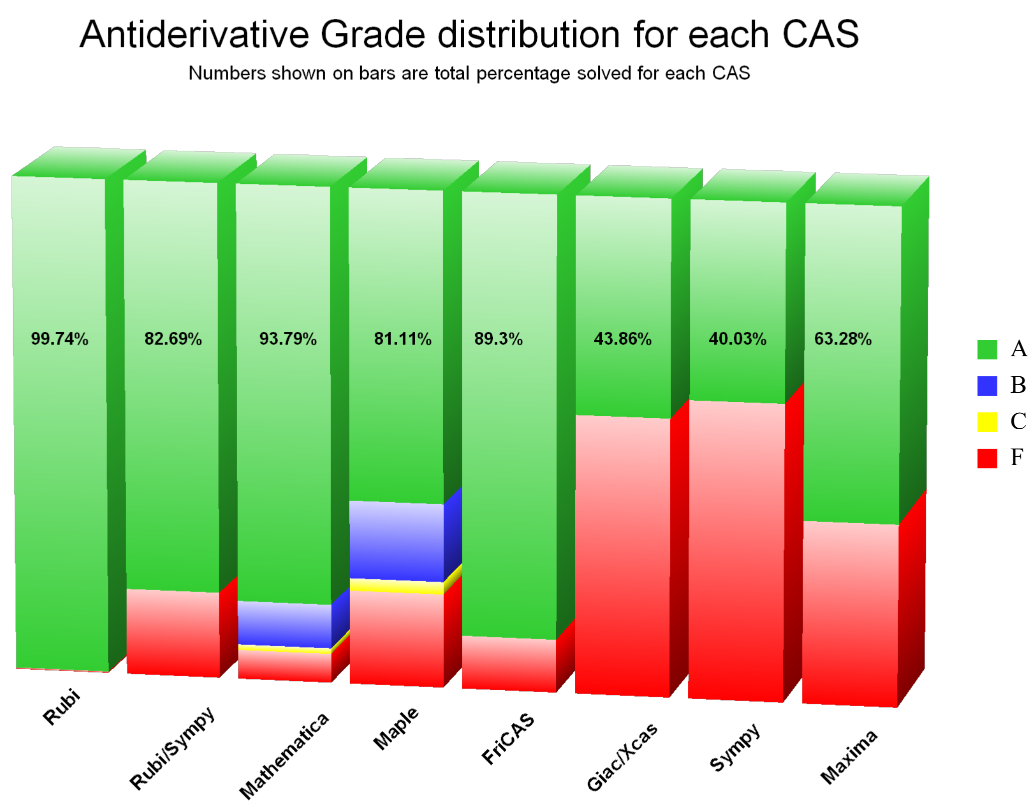
grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality.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

Grading is currently implemented only for for Mathematica, Rubi and Maple results. For all other CAS systems (Maxima, Fricas, Sympy, Giac, Rubi in sympy), the grading function is not yet implemented. For these systems, a grade of A is assigned if the integrate command completes successfully and a grade of F otherwise.

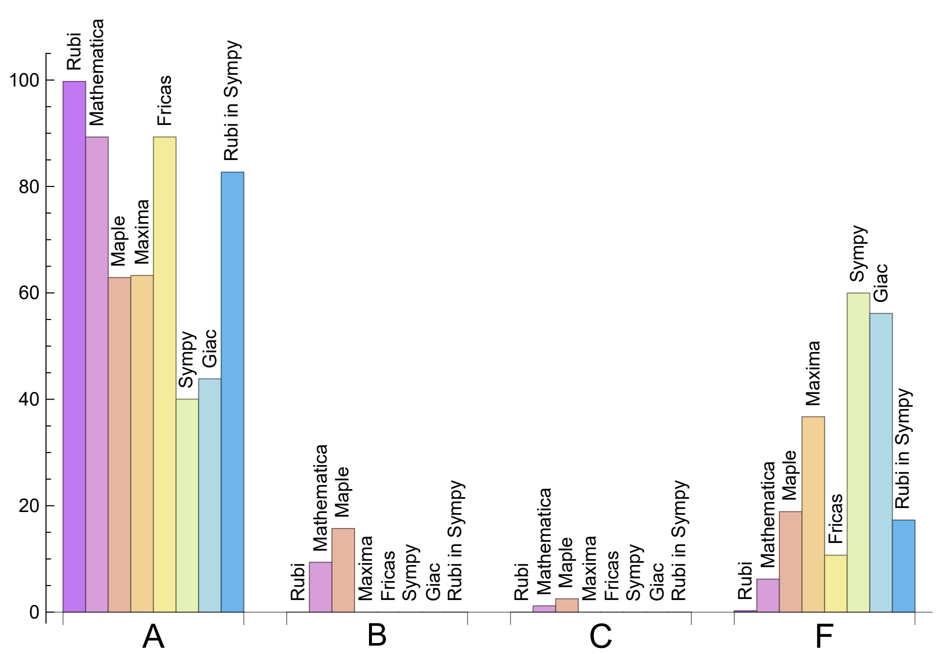
Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	99.74	0.	0.	0.26
Rubi in Sympy	82.69	0.	0.	17.31
Mathematica	89.3	9.38	1.19	6.21
Maple	62.88	15.72	2.51	18.89
Maxima	63.28	0.	0.	36.72
Fricas	89.3	0.	0.	10.7
Sympy	40.03	0.	0.	59.97
Giac	43.86	0.	0.	56.14

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



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



1.7 Performance

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

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.23	68.27	0.92	43.	1.
Rubi in Sympy	15.16	55.91	0.83	36.	0.89
Mathematica	0.14	65.36	1.08	44.	0.97
Maple	0.04	138.31	2.14	50.5	1.
Maxima	0.75	208.97	4.12	36.	1.2
Fricas	0.25	151.07	2.34	65.	1.35
Sympy	2.	69.64	1.92	24.	0.88
Giac	0.21	65.21	1.52	27.	1.12

1.8 list of integrals that has no closed form antiderivative

{199, 200, 201, 205, 206, 207, 213, 214, 229, 230, 231, 237, 238, 239, 240, 241, 243, 244, 245, 246, 251, 252, 253, 388, 389, 390, 395, 396, 413, 414, 415, 420, 421, 430, 431, 436, 437, 442, 443, 447, 448, 449, 543, 548, 549, 550, 555, 556, 576, 577, 730, 731, 732, 734, 737, 741, 742, 743, 744, 745, 746, 747, 748}

1.9 list of integrals not solved by each system

Not solved by Rubi {675, 677}

Not solved by Rubi in Sympy {14, 15, 16, 17, 18, 22, 28, 29, 36, 37, 49, 50, 53, 63, 64, 65, 195, 196, 197, 198, 207, 222, 223, 396, 398, 399, 400, 407, 408, 423, 424, 425, 426, 427, 428, 429, 432, 433, 434, 435, 438, 439, 440, 441, 444, 445, 446, 451, 454, 457, 460, 473, 474, 475, 476, 506, 510, 515, 520, 523, 525, 530, 531, 533, 534, 543, 544, 545, 546, 548, 549, 550, 551, 552, 553, 555, 556, 572, 573, 576, 577, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 633, 639, 657, 658, 661, 664, 668, 669, 672, 675, 676, 677, 678, 679, 680, 695, 706, 708, 709, 715, 716, 718, 728, 733, 735, 738, 740, 750, 757}

Not solved by Mathematica {16, 17, 202, 203, 208, 209, 210, 211, 247, 248, 359, 362, 380, 381, 391, 392, 393, 399, 400, 408, 423, 424, 425, 524, 526, 541, 542, 544, 545, 546, 551, 552, 553, 567, 568, 579, 580, 581, 583, 584, 585, 602, 750, 751, 754, 755, 756}

Not solved by Maple {17, 45, 46, 49, 50, 53, 56, 57, 64, 65, 66, 67, 68, 174, 175, 176, 177, 178, 180, 181, 182, 202, 203, 204, 208, 209, 210, 211, 212, 232, 233, 234, 235, 236, 247, 248, 249, 250, 254, 280, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 314, 340, 341, 342, 343, 344, 345, 346, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 365, 366, 367, 391, 392, 393, 394, 416, 417, 418, 419, 489, 490, 491, 492, 501, 502, 503, 504, 517, 518, 519, 526, 539, 542, 544, 545, 546, 551, 552, 553, 557, 558, 559, 560, 561, 562, 572, 573, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 597, 598, 599, 602, 650, 709, 751, 752, 753, 754, 755, 756, 757}

Not solved by Maxima {5, 6, 7, 11, 12, 13, 14, 15, 16, 17, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 62, 63, 64, 66, 67, 68, 202, 203, 204, 208, 209, 210, 211, 212, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 232, 233, 234, 235, 236, 247, 248, 249, 250, 254, 261, 262, 263, 264, 265, 266, 274, 275, 276, 277, 278, 279, 280, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 301, 302, 303, 304, 305, 306, 307, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 365, 366, 367, 375, 376, 377, 378, 379, 380, 381, 391, 392, 393, 394, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 416, 417, 418, 419, 422, 423, 424, 425, 453, 454, 455, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 501, 502, 503, 504, 509, 512, 513, 514, 517, 518, 519, 521, 522, 524, 526, 527, 528, 537, 538, 539, 540, 541, 542, 544, 545, 546, 551, 552, 553, 556, 557, 558, 559, 560, 561, 562, 565, 569, 570, 572, 573, 574, 575, 578, 579, 580, 581, 582, 583, 584, 585, 602, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 629, 681, 682, 683, 684, 709, 712, 754, 755, 756}

Not solved by Fricas {66, 67, 68, 115, 128, 154, 174, 175, 176, 177, 178, 180, 181, 182, 194, 247, 248, 249, 250, 301, 314, 340, 359, 360, 361, 362, 363, 365, 366, 367, 543, 544, 545, 546, 549, 550, 551, 552, 553, 556, 561, 562, 579, 580, 581, 582, 583, 584, 585, 610, 611, 612, 613, 614, 615, 616, 617, 618, 715, 719, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 742, 750, 751, 752, 753, 754, 755, 757}

Not solved by Sympy {7, 12, 13, 15, 16, 17, 26, 40, 41, 42, 44, 45, 46, 48, 49, 50, 52, 53, 55, 56, 57, 60, 61, 63, 64, 65, 66, 67, 68, 69, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 128, 129, 130, 131, 132, 133, 134, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 195, 196, 197, 198, 202, 203, 204, 208, 209, 210, 211, 212, 214, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 230, 231, 232, 233, 234, 235, 236, 240, 242, 244, 245, 247, 248, 249, 250, 254, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 300, 301, 302, 303, 304, 305, 306, 307, 314, 315, 316, 317, 318, 319, 320, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 432, 433, 434, 435, 438, 439, 440, 441, 444, 445, 446, 449, 451, 453, 454, 455, 457, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 493, 494, 495, 496, 501, 502, 503, 504, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 523, 524, 525, 526, 531, 534, 538, 539, 541, 542, 543, 544, 545, 546, 548, 549, 550, 551, 552, 553, 556, 557, 558, 559, 560, 561, 562, 566, 567, 568, 572, 573, 574, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 589, 591, 592, 593, 594, 595, 596, 597, 598, 599, 602, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 626, 642, 643, 644, 664, 667, 672, 681, 682, 683, 684, 688, 694, 696, 709, 710, 714, 727, 728, 729, 733, 736, 738, 739, 750, 751, 752, 753, 754, 755, 756, 757}

Not solved by Giac {12, 17, 33, 40, 41, 42, 44, 45, 46, 48, 49, 50, 52, 53, 55, 56, 57, 59, 60, 61, 63, 64, 66, 67, 68, 69, 76, 77, 78, 79, 80, 81, 89, 90, 91, 92, 93, 94, 95, 96, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 115, 116, 117, 118, 119, 120, 121, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 186, 187, 188, 189, 190, 191, 192, 193, 202, 203, 204, 208, 209, 210, 211, 212, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 232, 233, 234, 235, 236, 242, 247, 248, 249, 250, 254, 261, 262, 263, 264, 265, 266, 274, 275, 276, 277, 278, 279, 280, 281, 282, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 301, 302, 303, 304, 305, 306, 307, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 322, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 374, 375, 376, 377, 378, 379, 380, 381, 391, 392, 393, 394, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 416, 417, 418, 419, 422, 423, 424, 425, 453, 454, 455, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 475, 477, 479, 481, 483, 485, 487, 489, 491, 493, 495, 497, 499, 501, 503, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 531, 532, 533, 534, 538, 539, 540, 541, 542, 544, 545, 546, 547, 551, 552, 553, 557, 558, 559, 560, 561, 562, 566, 567, 568, 572, 573, 574, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 589, 590, 591, 592, 593, 594, 596, 597, 598, 599, 602, 607, 608, 609, 610, 611, 612, 614, 615, 616, 617, 618, 675, 677, 699, 707, 708, 709, 712, 717, 727, 728, 729, 733, 736, 738, 739, 750, 751, 752, 753, 754, 755, 756, 757}

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

Rubi {}

Rubi in Sympy {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

1.11 list of integrals solved by CAS but failed verification

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

Rubi {194}

Mathematica {194, 485, 486, 487, 488, 572, 573, 574}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Rubi in Sympy Verification phase not implemented yet.

2 detailed summary tables of results

2.1 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	10	12	12	8	12	8
normalized size	1	1.	1.	0.83	1.	1.	0.67	1.	0.67
time (sec)	N/A	0.033	0.003	0.003	0.759	0.254	0.13	0.226	6.918

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	12	15	15	8	16	8
normalized size	1	1.	1.	1.	1.25	1.25	0.67	1.33	0.67
time (sec)	N/A	0.034	0.003	0.003	0.795	0.296	0.201	0.235	6.938

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	23	30	30	19	31	17
normalized size	1	1.	1.	0.96	1.25	1.25	0.79	1.29	0.71
time (sec)	N/A	0.112	0.007	0.004	0.783	0.247	0.33	0.222	8.98

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	19	24	24	14	26	14
normalized size	1	1.	1.	1.	1.26	1.26	0.74	1.37	0.74
time (sec)	N/A	0.059	0.003	0.003	0.809	0.262	0.253	0.23	9.043

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	19	20	0	30	56	26	14
normalized size	1	1.	0.95	1.	0.	1.5	2.8	1.3	0.7
time (sec)	N/A	0.037	0.022	0.002	0.	0.248	2.768	0.234	6.265

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	31	31	0	49	114	41	22
normalized size	1	1.	0.97	0.97	0.	1.53	3.56	1.28	0.69
time (sec)	N/A	0.114	0.044	0.006	0.	0.254	164.253	0.228	8.515

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	26	27	0	45	0	35	19
normalized size	1	1.	0.96	1.	0.	1.67	0.	1.3	0.7
time (sec)	N/A	0.062	0.03	0.003	0.	0.247	0.	0.227	8.323

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	17	22	22	12	23	12
normalized size	1	1.	1.	1.06	1.38	1.38	0.75	1.44	0.75
time (sec)	N/A	0.036	0.005	0.003	0.869	0.268	0.243	0.233	11.105

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	33	38	38	24	41	20
normalized size	1	1.	1.	1.18	1.36	1.36	0.86	1.46	0.71
time (sec)	N/A	0.113	0.008	0.016	0.966	0.282	1.332	0.227	13.347

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	24	31	31	17	32	17
normalized size	1	1.	1.	1.04	1.35	1.35	0.74	1.39	0.74
time (sec)	N/A	0.059	0.004	0.001	0.894	0.264	0.287	0.222	13.265

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	25	0	38	82	32	17
normalized size	1	1.	1.	1.04	0.	1.58	3.42	1.33	0.71
time (sec)	N/A	0.041	0.028	0.003	0.	0.314	3.751	0.228	7.525

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	35	81	0	68	0	0	26
normalized size	1	1.	0.97	2.25	0.	1.89	0.	0.	0.72
time (sec)	N/A	0.122	0.056	0.034	0.	0.265	0.	0.	9.566

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	30	32	0	53	0	42	22
normalized size	1	1.	0.97	1.03	0.	1.71	0.	1.35	0.71
time (sec)	N/A	0.063	0.039	0.003	0.	0.249	0.	0.228	9.231

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	24	25	0	39	80	32	0
normalized size	1	1.	0.96	1.	0.	1.56	3.2	1.28	0.
time (sec)	N/A	0.065	0.064	0.004	0.	0.317	7.358	0.227	0.

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	36	52	0	39	0	32	0
normalized size	1	1.	0.97	1.41	0.	1.05	0.	0.86	0.
time (sec)	N/A	0.096	0.049	0.022	0.	0.261	0.	0.231	0.

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	0	42	0	72	0	58	0
normalized size	1	1.	0.	1.02	0.	1.76	0.	1.41	0.
time (sec)	N/A	0.115	0.305	0.013	0.	0.252	0.	0.245	0.

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	0	0	0	119	0	0	0
normalized size	1	1.	0.	0.	0.	1.49	0.	0.	0.
time (sec)	N/A	0.232	0.28	1.185	0.	0.305	0.	0.	0.

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	21	27	26	20	28	0
normalized size	1	1.	1.	0.95	1.23	1.18	0.91	1.27	0.
time (sec)	N/A	0.054	0.011	0.006	0.766	0.245	0.259	0.23	0.

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	24	26	38	42	24	35	22
normalized size	1	1.	0.89	0.96	1.41	1.56	0.89	1.3	0.81
time (sec)	N/A	0.06	0.023	0.01	0.778	0.258	0.274	0.255	10.058

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	24	29	82	47	37	27	15
normalized size	1	1.	1.14	1.38	3.9	2.24	1.76	1.29	0.71
time (sec)	N/A	0.041	0.016	0.01	0.766	0.265	0.249	0.323	6.899

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	24	29	115	63	51	27	29
normalized size	1	1.	0.71	0.85	3.38	1.85	1.5	0.79	0.85
time (sec)	N/A	0.063	0.016	0.009	0.813	0.254	0.309	0.322	10.22

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	28	26	34	32	29	35	0
normalized size	1	1.	0.9	0.84	1.1	1.03	0.94	1.13	0.
time (sec)	N/A	0.061	0.015	0.006	0.777	0.25	0.284	0.248	0.

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	31	32	46	51	32	43	29
normalized size	1	1.	0.84	0.86	1.24	1.38	0.86	1.16	0.78
time (sec)	N/A	0.066	0.026	0.009	0.813	0.264	0.279	0.244	10.596

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	28	33	90	53	41	32	17
normalized size	1	1.	1.22	1.43	3.91	2.3	1.78	1.39	0.74
time (sec)	N/A	0.047	0.016	0.009	0.783	0.242	0.26	0.264	7.453

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	28	33	123	69	54	32	32
normalized size	1	1.	0.74	0.87	3.24	1.82	1.42	0.84	0.84
time (sec)	N/A	0.069	0.017	0.007	0.781	0.25	0.314	0.251	11.186

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	31	27	43	34	0	39	37
normalized size	1	1.	0.74	0.64	1.02	0.81	0.	0.93	0.88
time (sec)	N/A	0.079	0.029	0.026	0.771	0.268	0.	0.289	10.716

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	24	20	28	15	20	17
normalized size	1	1.	1.	1.5	1.25	1.75	0.94	1.25	1.06
time (sec)	N/A	0.035	0.01	0.013	0.78	0.278	0.186	0.244	6.067

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	39	41	46	39	41	0
normalized size	1	1.	1.	1.22	1.28	1.44	1.22	1.28	0.
time (sec)	N/A	0.065	0.021	0.01	0.798	0.238	0.299	0.236	0.

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	48	57	63	65	73	63	0
normalized size	1	1.	0.92	1.1	1.21	1.25	1.4	1.21	0.
time (sec)	N/A	0.081	0.026	0.01	0.806	0.245	0.376	0.224	0.

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	34	47	43	53	49	51	39
normalized size	1	1.	0.85	1.18	1.08	1.32	1.22	1.27	0.98
time (sec)	N/A	0.081	0.02	0.015	0.768	0.278	0.368	0.246	14.795

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	47	67	77	113	78	80	60
normalized size	1	1.	0.77	1.1	1.26	1.85	1.28	1.31	0.98
time (sec)	N/A	0.103	0.055	0.019	0.779	0.263	0.45	0.245	16.736

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	66	86	115	189	114	103	80
normalized size	1	1.	0.8	1.04	1.39	2.28	1.37	1.24	0.96
time (sec)	N/A	0.128	0.136	0.018	0.806	0.263	0.554	0.27	20.444

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	91	100	1	51	0	46
normalized size	1	1.	1.	1.82	2.	0.02	1.02	0.	0.92
time (sec)	N/A	0.13	0.03	0.076	0.93	0.244	2.944	0.	19.064

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	47	43	43	42	50	26
normalized size	1	1.	1.	1.38	1.26	1.26	1.24	1.47	0.76
time (sec)	N/A	0.131	0.012	0.017	0.975	0.245	2.301	0.24	15.657

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	67	171	171	1	253	104	66
normalized size	1	1.	0.76	1.94	1.94	0.01	2.88	1.18	0.75
time (sec)	N/A	0.128	0.074	0.108	0.959	0.264	3.675	0.24	23.415

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	48	76	112	72	218	89	0
normalized size	1	1.	0.79	1.25	1.84	1.18	3.57	1.46	0.
time (sec)	N/A	0.107	0.035	0.024	0.794	0.258	2.854	0.243	0.

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	86	212	211	1	366	165	0
normalized size	1	1.	0.68	1.67	1.66	0.01	2.88	1.3	0.
time (sec)	N/A	0.156	0.097	0.096	0.879	0.257	4.251	0.237	0.

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	4	4	4	4	15	4	3
normalized size	1	1.	1.	1.	1.	1.	3.75	1.	0.75
time (sec)	N/A	0.028	0.026	0.005	0.962	0.234	0.188	0.235	5.366

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	23	4	20	20	15	22	3
normalized size	1	1.	5.75	1.	5.	5.	3.75	5.5	0.75
time (sec)	N/A	0.031	0.006	0.003	0.781	0.236	0.182	0.249	7.605

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	38	34	42	42	0	0	20
normalized size	1	1.	1.41	1.26	1.56	1.56	0.	0.	0.74
time (sec)	N/A	0.088	0.023	0.012	0.833	0.252	0.	0.	17.61

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	60	51	65	65	0	0	34
normalized size	1	1.	1.5	1.27	1.62	1.62	0.	0.	0.85
time (sec)	N/A	0.152	0.025	0.01	0.802	0.256	0.	0.	22.204

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	84	74	96	96	0	0	66
normalized size	1	1.	1.22	1.07	1.39	1.39	0.	0.	0.96
time (sec)	N/A	0.19	0.027	0.01	0.817	0.26	0.	0.	25.315

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	53	0	1	24	28	27
normalized size	1	1.	1.	1.77	0.	0.03	0.8	0.93	0.9
time (sec)	N/A	0.066	0.012	0.04	0.	0.258	0.416	0.243	13.063

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	108	134	0	240	0	0	102
normalized size	1	1.	0.98	1.22	0.	2.18	0.	0.	0.93
time (sec)	N/A	0.188	0.061	0.038	0.	0.263	0.	0.	39.039

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	168	0	0	338	0	0	173
normalized size	1	1.	0.91	0.	0.	1.84	0.	0.	0.94
time (sec)	N/A	0.308	0.045	0.031	0.	0.274	0.	0.	87.866

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	224	0	0	433	0	0	264
normalized size	1	1.	0.84	0.	0.	1.62	0.	0.	0.99
time (sec)	N/A	0.404	0.048	0.033	0.	0.26	0.	0.	102.86

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	53	82	0	1	53	66	48
normalized size	1	1.	0.9	1.39	0.	0.02	0.9	1.12	0.81
time (sec)	N/A	0.074	0.078	0.046	0.	0.267	0.536	0.239	10.519

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	271	195	0	509	0	0	156
normalized size	1	1.	1.58	1.13	0.	2.96	0.	0.	0.91
time (sec)	N/A	0.272	0.154	0.052	0.	0.267	0.	0.	47.164

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	333	333	477	0	0	624	0	0	0
normalized size	1	1.	1.43	0.	0.	1.87	0.	0.	0.
time (sec)	N/A	0.637	0.165	0.101	0.	0.268	0.	0.	0.

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	501	501	434	0	0	852	0	0	0
normalized size	1	1.	0.87	0.	0.	1.7	0.	0.	0.
time (sec)	N/A	0.909	0.42	0.105	0.	0.261	0.	0.	0.

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	68	94	0	1	85	82	73
normalized size	1	1.	0.81	1.12	0.	0.01	1.01	0.98	0.87
time (sec)	N/A	0.098	0.085	0.061	0.	0.272	0.689	0.235	13.397

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	184	223	0	756	0	0	209
normalized size	1	1.	0.83	1.	0.	3.39	0.	0.	0.94
time (sec)	N/A	0.38	0.434	0.058	0.	0.263	0.	0.	65.153

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	420	353	0	0	1161	0	0	0
normalized size	1	1.	0.84	0.	0.	2.76	0.	0.	0.
time (sec)	N/A	0.994	0.75	0.115	0.	0.268	0.	0.	0.

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	22	0	1	26	28	29
normalized size	1	1.	1.	0.73	0.	0.03	0.87	0.93	0.97
time (sec)	N/A	0.042	0.012	0.004	0.	0.238	0.402	0.237	15.384

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	108	134	0	240	0	0	102
normalized size	1	1.	0.98	1.22	0.	2.18	0.	0.	0.93
time (sec)	N/A	0.159	0.061	0.037	0.	0.25	0.	0.	35.722

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	168	0	0	338	0	0	173
normalized size	1	1.	0.91	0.	0.	1.84	0.	0.	0.94
time (sec)	N/A	0.298	0.044	0.027	0.	0.252	0.	0.	84.399

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	268	268	224	0	0	433	0	0	264
normalized size	1	1.	0.84	0.	0.	1.62	0.	0.	0.99
time (sec)	N/A	0.398	0.052	0.03	0.	0.256	0.	0.	102.562

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	23	21	31	28	22	27	15
normalized size	1	1.	1.05	0.95	1.41	1.27	1.	1.23	0.68
time (sec)	N/A	0.035	0.021	0.004	0.753	0.252	0.227	0.236	8.543

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	48	56	73	82	54	0	54
normalized size	1	1.	0.76	0.89	1.16	1.3	0.86	0.	0.86
time (sec)	N/A	0.132	0.051	0.025	0.75	0.288	0.425	0.	18.898

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	90	91	117	304	0	0	63
normalized size	1	1.	0.92	0.93	1.19	3.1	0.	0.	0.64
time (sec)	N/A	0.268	0.074	0.04	0.787	0.293	0.	0.	27.763

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	124	119	149	425	0	0	94
normalized size	1	1.	0.97	0.93	1.16	3.32	0.	0.	0.73
time (sec)	N/A	0.356	0.099	0.049	0.793	0.256	0.	0.	35.5

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	70	78	0	1	87	89	73
normalized size	1	1.	0.8	0.9	0.	0.01	1.	1.02	0.84
time (sec)	N/A	0.096	0.084	0.014	0.	0.261	0.653	0.257	17.162

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	209	209	0	564	0	0	0
normalized size	1	1.	1.07	1.07	0.	2.88	0.	0.	0.
time (sec)	N/A	0.836	0.295	0.053	0.	0.348	0.	0.	0.

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	254	0	0	1010	0	0	0
normalized size	1	1.	0.8	0.	0.	3.2	0.	0.	0.
time (sec)	N/A	1.919	0.747	0.116	0.	0.316	0.	0.	0.

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	93	0	122	167	0	177	0
normalized size	1	1.	0.98	0.	1.28	1.76	0.	1.86	0.
time (sec)	N/A	0.297	0.079	0.04	0.784	0.27	0.	0.289	0.

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	106	0	0	0	0	0	75
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.71
time (sec)	N/A	0.178	0.164	0.127	0.	0.	0.	0.	8.967

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	0	0	0	0	0	60
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.214	0.088	0.033	0.	0.	0.	0.	35.77

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	84	0	0	0	0	0	66
normalized size	1	1.	0.99	0.	0.	0.	0.	0.	0.78
time (sec)	N/A	0.225	0.089	0.045	0.	0.	0.	0.	38.813

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	140	51	54	0	0	46
normalized size	1	1.	1.	3.04	1.11	1.17	0.	0.	1.
time (sec)	N/A	0.042	0.026	0.046	0.845	0.257	0.	0.	3.316

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	77	76	124	101	95	107	26
normalized size	1	1.	3.21	3.17	5.17	4.21	3.96	4.46	1.08
time (sec)	N/A	0.043	0.021	0.016	0.759	0.319	0.323	0.241	3.575

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	65	64	104	85	82	90	24
normalized size	1	1.	2.71	2.67	4.33	3.54	3.42	3.75	1.
time (sec)	N/A	0.042	0.018	0.012	0.832	0.263	0.3	0.254	3.682

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	53	52	84	69	68	74	82
normalized size	1	1.	0.62	0.6	0.98	0.8	0.79	0.86	0.95
time (sec)	N/A	0.152	0.016	0.012	0.817	0.237	0.267	0.29	15.167

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	41	40	63	53	54	58	54
normalized size	1	1.	0.66	0.65	1.02	0.85	0.87	0.94	0.87
time (sec)	N/A	0.104	0.014	0.01	0.775	0.244	0.239	0.248	9.926

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	29	28	43	36	41	932	36
normalized size	1	1.	0.66	0.64	0.98	0.82	0.93	21.18	0.82
time (sec)	N/A	0.063	0.011	0.006	0.785	0.252	0.211	0.255	5.741

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	24	24	24	24	14
normalized size	1	1.	1.	0.95	1.2	1.2	1.2	1.2	0.7
time (sec)	N/A	0.024	0.004	0.003	0.762	0.236	0.18	0.229	2.551

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	16	18	18	0	0	14
normalized size	1	1.	1.	1.07	1.2	1.2	0.	0.	0.93
time (sec)	N/A	0.036	0.004	0.014	0.833	0.236	0.	0.	3.028

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	32	35	24	47	0	0	32
normalized size	1	1.	0.91	1.	0.69	1.34	0.	0.	0.91
time (sec)	N/A	0.071	0.016	0.026	0.836	0.249	0.	0.	5.294

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	48	57	30	65	0	0	54
normalized size	1	1.	0.83	0.98	0.52	1.12	0.	0.	0.93
time (sec)	N/A	0.11	0.031	0.032	0.907	0.237	0.	0.	8.425

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	59	79	30	80	0	0	76
normalized size	1	1.	0.73	0.98	0.37	0.99	0.	0.	0.94
time (sec)	N/A	0.147	0.039	0.039	0.952	0.27	0.	0.	12.099

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	71	101	30	96	0	0	27
normalized size	1	1.	2.96	4.21	1.25	4.	0.	0.	1.12
time (sec)	N/A	0.038	0.048	0.048	0.825	0.256	0.	0.	3.609

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	83	123	30	112	0	0	26
normalized size	1	1.	3.46	5.12	1.25	4.67	0.	0.	1.08
time (sec)	N/A	0.039	0.054	0.053	0.858	0.254	0.	0.	3.606

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	119	164	171	153	0	159	36
normalized size	1	1.	3.5	4.82	5.03	4.5	0.	4.68	1.06
time (sec)	N/A	0.04	0.082	0.118	0.795	0.256	0.	0.253	3.147

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	107	142	151	136	0	143	36
normalized size	1	1.	3.15	4.18	4.44	4.	0.	4.21	1.06
time (sec)	N/A	0.039	0.071	0.044	0.78	0.25	0.	0.247	3.151

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	95	120	131	120	0	127	126
normalized size	1	1.	0.74	0.94	1.02	0.94	0.	0.99	0.98
time (sec)	N/A	0.239	0.058	0.038	0.81	0.255	0.	0.23	23.115

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	83	98	111	104	0	111	102
normalized size	1	1.	0.79	0.93	1.06	0.99	0.	1.06	0.97
time (sec)	N/A	0.153	0.05	0.033	0.814	0.251	0.	0.232	16.376

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	71	76	90	88	0	95	78
normalized size	1	1.	0.87	0.93	1.1	1.07	0.	1.16	0.95
time (sec)	N/A	0.105	0.043	0.03	0.781	0.282	0.	0.251	10.607

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	59	54	72	73	0	80	53
normalized size	1	1.	1.	0.92	1.22	1.24	0.	1.36	0.9
time (sec)	N/A	0.06	0.034	0.026	0.767	0.277	0.	0.23	5.888

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	26	34	34	0	38	36
normalized size	1	1.	1.	0.7	0.92	0.92	0.	1.03	0.97
time (sec)	N/A	0.018	0.006	0.019	0.779	0.251	0.	0.249	2.031

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	44	38	69	0	0	44
normalized size	1	1.	1.	0.9	0.78	1.41	0.	0.	0.9
time (sec)	N/A	0.057	0.023	0.026	0.822	0.258	0.	0.	5.259

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	62	67	38	93	0	0	70
normalized size	1	1.	0.85	0.92	0.52	1.27	0.	0.	0.96
time (sec)	N/A	0.096	0.066	0.035	0.82	0.263	0.	0.	8.601

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	77	89	38	109	0	0	94
normalized size	1	1.	0.8	0.93	0.4	1.14	0.	0.	0.98
time (sec)	N/A	0.141	0.054	0.039	0.849	0.258	0.	0.	12.684

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	89	111	38	126	0	0	117
normalized size	1	1.	0.75	0.93	0.32	1.06	0.	0.	0.98
time (sec)	N/A	0.184	0.064	0.047	0.823	0.269	0.	0.	17.615

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	101	133	38	142	0	0	37
normalized size	1	1.	2.97	3.91	1.12	4.18	0.	0.	1.09
time (sec)	N/A	0.037	0.076	0.054	0.829	0.252	0.	0.	3.306

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	113	155	38	158	0	0	37
normalized size	1	1.	3.32	4.56	1.12	4.65	0.	0.	1.09
time (sec)	N/A	0.037	0.086	0.063	0.916	0.261	0.	0.	3.302

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	140	51	54	0	0	46
normalized size	1	1.	1.	3.04	1.11	1.17	0.	0.	1.
time (sec)	N/A	0.04	0.026	0.048	0.884	0.26	0.	0.	3.516

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	77	76	124	101	95	0	26
normalized size	1	1.	3.21	3.17	5.17	4.21	3.96	0.	1.08
time (sec)	N/A	0.039	0.021	0.019	0.799	0.269	0.337	0.	3.798

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	65	64	104	85	82	162	24
normalized size	1	1.	2.71	2.67	4.33	3.54	3.42	6.75	1.
time (sec)	N/A	0.039	0.018	0.016	0.801	0.253	0.31	0.239	3.781

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	53	52	84	69	68	128	78
normalized size	1	1.	0.63	0.62	1.	0.82	0.81	1.52	0.93
time (sec)	N/A	0.154	0.016	0.014	0.973	0.271	0.285	0.232	16.003

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	41	40	63	53	54	95	61
normalized size	1	1.	0.61	0.6	0.94	0.79	0.81	1.42	0.91
time (sec)	N/A	0.113	0.014	0.011	0.79	0.28	0.254	0.229	11.29

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	29	28	43	36	41	932	36
normalized size	1	1.	0.66	0.64	0.98	0.82	0.93	21.18	0.82
time (sec)	N/A	0.074	0.011	0.007	0.83	0.318	0.22	0.26	6.545

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	24	24	24	24	14
normalized size	1	1.	1.	0.95	1.2	1.2	1.2	1.2	0.7
time (sec)	N/A	0.036	0.005	0.004	0.814	0.308	0.19	0.224	3.462

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	41	18	18	0	0	14
normalized size	1	1.	1.	2.73	1.2	1.2	0.	0.	0.93
time (sec)	N/A	0.034	0.005	0.022	0.958	0.27	0.	0.	3.06

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	32	97	24	47	0	0	32
normalized size	1	1.	0.91	2.77	0.69	1.34	0.	0.	0.91
time (sec)	N/A	0.068	0.016	0.033	0.845	0.256	0.	0.	5.539

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	48	141	30	65	0	0	54
normalized size	1	1.	0.83	2.43	0.52	1.12	0.	0.	0.93
time (sec)	N/A	0.104	0.031	0.046	0.883	0.26	0.	0.	8.479

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	59	177	30	80	0	0	76
normalized size	1	1.	0.73	2.19	0.37	0.99	0.	0.	0.94
time (sec)	N/A	0.144	0.039	0.056	0.851	0.255	0.	0.	12.029

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	71	213	30	96	0	0	27
normalized size	1	1.	2.96	8.88	1.25	4.	0.	0.	1.12
time (sec)	N/A	0.038	0.047	0.073	0.831	0.266	0.	0.	3.653

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	83	249	30	112	0	0	26
normalized size	1	1.	3.46	10.38	1.25	4.67	0.	0.	1.08
time (sec)	N/A	0.037	0.055	0.099	0.93	0.278	0.	0.	3.641

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	58	106	78	72	0	0	36
normalized size	1	1.	1.71	3.12	2.29	2.12	0.	0.	1.06
time (sec)	N/A	0.038	0.036	0.033	0.842	0.329	0.	0.	3.179

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	56	109	73	68	0	0	36
normalized size	1	1.	1.65	3.21	2.15	2.	0.	0.	1.06
time (sec)	N/A	0.038	0.031	0.033	0.869	0.27	0.	0.	3.119

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	75	38	30	0	0	36
normalized size	1	1.	1.	2.21	1.12	0.88	0.	0.	1.06
time (sec)	N/A	0.025	0.01	0.023	0.884	0.265	0.	0.	2.332

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	78	35	30	0	0	34
normalized size	1	1.	1.	2.44	1.09	0.94	0.	0.	1.06
time (sec)	N/A	0.011	0.007	0.018	0.834	0.267	0.	0.	1.177

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	42	100	38	65	0	0	36
normalized size	1	1.	1.24	2.94	1.12	1.91	0.	0.	1.06
time (sec)	N/A	0.037	0.034	0.029	0.835	0.272	0.	0.	3.109

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	44	102	38	68	0	0	37
normalized size	1	1.	1.29	3.	1.12	2.	0.	0.	1.09
time (sec)	N/A	0.036	0.033	0.033	0.839	0.267	0.	0.	3.144

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	9	11	11	7	11	7
normalized size	1	1.	1.	0.82	1.	1.	0.64	1.	0.64
time (sec)	N/A	0.024	0.003	0.005	0.793	0.258	0.127	0.237	3.003

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	136	47	0	0	0	32
normalized size	1	1.	1.	3.89	1.34	0.	0.	0.	0.91
time (sec)	N/A	0.035	0.024	0.053	0.85	0.	0.	0.	3.467

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	77	126	123	108	0	0	24
normalized size	1	1.	3.5	5.73	5.59	4.91	0.	0.	1.09
time (sec)	N/A	0.035	0.047	0.039	0.819	0.261	0.	0.	3.656

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	65	103	103	92	0	0	22
normalized size	1	1.	3.1	4.9	4.9	4.38	0.	0.	1.05
time (sec)	N/A	0.035	0.037	0.029	0.834	0.258	0.	0.	3.651

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	53	80	82	76	0	0	68
normalized size	1	1.	0.67	1.01	1.04	0.96	0.	0.	0.86
time (sec)	N/A	0.101	0.031	0.026	0.824	0.241	0.	0.	9.709

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	40	57	62	58	0	0	48
normalized size	1	1.	0.71	1.02	1.11	1.04	0.	0.	0.86
time (sec)	N/A	0.061	0.023	0.023	0.824	0.256	0.	0.	6.055

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	32	39	41	0	0	24
normalized size	1	1.	1.	1.14	1.39	1.46	0.	0.	0.86
time (sec)	N/A	0.038	0.007	0.02	0.803	0.273	0.	0.	3.7

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	15	18	18	0	0	12
normalized size	1	1.	1.	1.15	1.38	1.38	0.	0.	0.92
time (sec)	N/A	0.03	0.004	0.019	0.841	0.261	0.	0.	3.129

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	24	27	20	24	12
normalized size	1	1.	1.	1.06	1.33	1.5	1.11	1.33	0.67
time (sec)	N/A	0.03	0.005	0.003	0.923	0.267	0.229	0.245	3.43

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	27	49	28	42	22	0	27
normalized size	1	1.	0.69	1.26	0.72	1.08	0.56	0.	0.69
time (sec)	N/A	0.063	0.011	0.014	0.822	0.261	0.248	0.	6.654

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	41	73	30	58	39	0	49
normalized size	1	1.	0.67	1.2	0.49	0.95	0.64	0.	0.8
time (sec)	N/A	0.097	0.015	0.019	0.823	0.269	0.296	0.	11.067

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	53	96	28	74	53	0	70
normalized size	1	1.	0.65	1.17	0.34	0.9	0.65	0.	0.85
time (sec)	N/A	0.132	0.016	0.019	0.838	0.253	0.315	0.	16.221

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	65	119	30	90	66	0	22
normalized size	1	1.	2.95	5.41	1.36	4.09	3.	0.	1.
time (sec)	N/A	0.033	0.019	0.022	0.813	0.253	0.403	0.	3.611

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	77	142	28	107	80	0	20
normalized size	1	1.	3.67	6.76	1.33	5.1	3.81	0.	0.95
time (sec)	N/A	0.033	0.021	0.023	0.819	0.258	0.379	0.	3.644

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	169	51	0	0	0	44
normalized size	1	1.	1.	3.67	1.11	0.	0.	0.	0.96
time (sec)	N/A	0.039	0.026	0.052	0.874	0.	0.	0.	3.38

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	81	123	126	113	0	0	27
normalized size	1	1.	3.38	5.12	5.25	4.71	0.	0.	1.12
time (sec)	N/A	0.039	0.044	0.039	0.803	0.264	0.	0.	3.628

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	69	101	105	97	0	0	26
normalized size	1	1.	2.88	4.21	4.38	4.04	0.	0.	1.08
time (sec)	N/A	0.041	0.036	0.033	0.818	0.263	0.	0.	3.598

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	57	79	85	81	0	0	76
normalized size	1	1.	0.7	0.98	1.05	1.	0.	0.	0.94
time (sec)	N/A	0.141	0.03	0.028	0.858	0.255	0.	0.	11.507

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	44	57	65	63	0	0	54
normalized size	1	1.	0.76	0.98	1.12	1.09	0.	0.	0.93
time (sec)	N/A	0.098	0.024	0.026	0.83	0.252	0.	0.	7.84

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	32	35	43	47	0	0	32
normalized size	1	1.	0.91	1.	1.23	1.34	0.	0.	0.91
time (sec)	N/A	0.058	0.009	0.02	0.843	0.238	0.	0.	4.648

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	16	18	18	0	0	15
normalized size	1	1.	1.	1.07	1.2	1.2	0.	0.	1.
time (sec)	N/A	0.035	0.004	0.019	0.933	0.244	0.	0.	3.047

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	24	30	29	24	15
normalized size	1	1.	1.	0.95	1.2	1.5	1.45	1.2	0.75
time (sec)	N/A	0.036	0.007	0.003	0.784	0.235	0.215	0.234	3.431

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	32	52	30	46	29	0	36
normalized size	1	1.	0.73	1.18	0.68	1.05	0.66	0.	0.82
time (sec)	N/A	0.073	0.013	0.017	0.864	0.242	0.25	0.	6.787

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	45	74	30	63	44	0	54
normalized size	1	1.	0.73	1.19	0.48	1.02	0.71	0.	0.87
time (sec)	N/A	0.111	0.014	0.022	0.872	0.367	0.293	0.	11.57

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	58	98	30	81	58	0	82
normalized size	1	1.	0.67	1.14	0.35	0.94	0.67	0.	0.95
time (sec)	N/A	0.153	0.017	0.026	0.878	0.26	0.318	0.	16.842

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	69	121	30	96	71	0	26
normalized size	1	1.	2.88	5.04	1.25	4.	2.96	0.	1.08
time (sec)	N/A	0.038	0.019	0.029	0.84	0.337	0.366	0.	3.652

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	82	144	30	113	85	0	24
normalized size	1	1.	3.42	6.	1.25	4.71	3.54	0.	1.
time (sec)	N/A	0.038	0.023	0.036	0.978	0.32	0.386	0.	3.671

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	110	155	174	161	0	0	36
normalized size	1	1.	3.24	4.56	5.12	4.74	0.	0.	1.06
time (sec)	N/A	0.039	0.078	0.072	0.987	0.299	0.	0.	3.19

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	98	133	154	144	0	0	36
normalized size	1	1.	2.88	3.91	4.53	4.24	0.	0.	1.06
time (sec)	N/A	0.039	0.064	0.041	0.969	0.285	0.	0.	3.239

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	86	111	134	128	0	0	117
normalized size	1	1.	0.72	0.93	1.13	1.08	0.	0.	0.98
time (sec)	N/A	0.194	0.051	0.036	0.832	0.265	0.	0.	17.91

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	74	89	113	112	0	0	94
normalized size	1	1.	0.77	0.93	1.18	1.17	0.	0.	0.98
time (sec)	N/A	0.146	0.044	0.032	0.928	0.32	0.	0.	12.903

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	60	67	92	93	0	0	70
normalized size	1	1.	0.82	0.92	1.26	1.27	0.	0.	0.96
time (sec)	N/A	0.105	0.034	0.029	0.88	0.318	0.	0.	8.839

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	44	68	74	0	0	44
normalized size	1	1.	1.	0.9	1.39	1.51	0.	0.	0.9
time (sec)	N/A	0.061	0.013	0.021	0.912	0.269	0.	0.	5.379

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	28	46	36	0	0	37
normalized size	1	1.	1.	0.72	1.18	0.92	0.	0.	0.95
time (sec)	N/A	0.049	0.008	0.025	0.913	0.259	0.	0.	4.102

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	58	38	84	0	0	53
normalized size	1	1.	1.	0.92	0.6	1.33	0.	0.	0.84
time (sec)	N/A	0.089	0.028	0.035	0.879	0.244	0.	0.	7.735

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	74	80	38	103	0	0	78
normalized size	1	1.	0.86	0.93	0.44	1.2	0.	0.	0.91
time (sec)	N/A	0.132	0.08	0.043	0.902	0.265	0.	0.	12.678

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	86	102	38	119	0	0	102
normalized size	1	1.	0.79	0.94	0.35	1.09	0.	0.	0.94
time (sec)	N/A	0.176	0.084	0.053	0.834	0.271	0.	0.	18.512

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	100	124	38	135	0	0	126
normalized size	1	1.	0.76	0.94	0.29	1.02	0.	0.	0.95
time (sec)	N/A	0.225	0.133	0.063	0.846	0.256	0.	0.	25.292

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	112	146	38	151	0	0	34
normalized size	1	1.	3.29	4.29	1.12	4.44	0.	0.	1.
time (sec)	N/A	0.038	0.1	0.073	0.912	0.269	0.	0.	3.189

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	124	168	38	167	0	0	34
normalized size	1	1.	3.65	4.94	1.12	4.91	0.	0.	1.
time (sec)	N/A	0.038	0.177	0.085	0.837	0.252	0.	0.	3.244

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	169	51	0	0	0	44
normalized size	1	1.	1.	3.67	1.11	0.	0.	0.	0.96
time (sec)	N/A	0.039	0.026	0.054	0.908	0.	0.	0.	3.428

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	81	249	126	113	0	0	27
normalized size	1	1.	3.38	10.38	5.25	4.71	0.	0.	1.12
time (sec)	N/A	0.039	0.047	0.065	0.958	0.262	0.	0.	3.593

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	69	213	105	97	0	0	26
normalized size	1	1.	2.88	8.88	4.38	4.04	0.	0.	1.08
time (sec)	N/A	0.04	0.043	0.054	0.842	0.278	0.	0.	3.617

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	57	177	85	81	0	0	76
normalized size	1	1.	0.7	2.19	1.05	1.	0.	0.	0.94
time (sec)	N/A	0.153	0.031	0.046	0.84	0.237	0.	0.	12.329

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	44	141	65	63	0	0	54
normalized size	1	1.	0.76	2.43	1.12	1.09	0.	0.	0.93
time (sec)	N/A	0.11	0.023	0.039	0.912	0.242	0.	0.	8.534

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	32	97	43	47	0	0	32
normalized size	1	1.	0.91	2.77	1.23	1.34	0.	0.	0.91
time (sec)	N/A	0.07	0.009	0.03	0.831	0.253	0.	0.	5.353

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	41	18	18	0	0	15
normalized size	1	1.	1.	2.73	1.2	1.2	0.	0.	1.
time (sec)	N/A	0.035	0.005	0.023	0.803	0.271	0.	0.	3.065

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	24	30	29	24	15
normalized size	1	1.	1.	0.95	1.2	1.5	1.45	1.2	0.75
time (sec)	N/A	0.036	0.006	0.002	0.766	0.245	0.215	0.245	3.401

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	32	52	30	46	29	0	36
normalized size	1	1.	0.73	1.18	0.68	1.05	0.66	0.	0.82
time (sec)	N/A	0.074	0.012	0.022	0.811	0.251	0.25	0.	6.569

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	45	75	30	63	44	0	61
normalized size	1	1.	0.67	1.12	0.45	0.94	0.66	0.	0.91
time (sec)	N/A	0.113	0.015	0.028	0.819	0.257	0.291	0.	11.328

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	58	97	30	81	58	0	78
normalized size	1	1.	0.7	1.17	0.36	0.98	0.7	0.	0.94
time (sec)	N/A	0.154	0.018	0.035	0.817	0.236	0.33	0.	17.163

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	69	121	30	96	71	0	26
normalized size	1	1.	2.88	5.04	1.25	4.	2.96	0.	1.08
time (sec)	N/A	0.038	0.02	0.045	0.847	0.239	0.364	0.	3.631

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	82	84	30	113	85	0	24
normalized size	1	1.	3.42	3.5	1.25	4.71	3.54	0.	1.
time (sec)	N/A	0.038	0.023	0.045	0.803	0.241	0.384	0.	3.656

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	59	120	88	90	0	0	36
normalized size	1	1.	1.74	3.53	2.59	2.65	0.	0.	1.06
time (sec)	N/A	0.039	0.082	0.037	0.811	0.279	0.	0.	3.211

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	55	115	84	85	0	0	36
normalized size	1	1.	1.62	3.38	2.47	2.5	0.	0.	1.06
time (sec)	N/A	0.039	0.078	0.034	0.837	0.272	0.	0.	3.154

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	44	105	63	69	0	0	36
normalized size	1	1.	1.29	3.09	1.85	2.03	0.	0.	1.06
time (sec)	N/A	0.025	0.027	0.026	0.8	0.255	0.	0.	2.428

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	39	98	58	65	0	0	34
normalized size	1	1.	1.22	3.06	1.81	2.03	0.	0.	1.06
time (sec)	N/A	0.011	0.03	0.023	0.806	0.264	0.	0.	1.181

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	82	38	30	0	0	32
normalized size	1	1.	1.	2.41	1.12	0.88	0.	0.	0.94
time (sec)	N/A	0.037	0.012	0.025	0.827	0.245	0.	0.	3.207

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	78	38	30	0	0	34
normalized size	1	1.	1.	2.29	1.12	0.88	0.	0.	1.
time (sec)	N/A	0.038	0.014	0.026	0.803	0.254	0.	0.	3.302

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	56	112	38	77	0	0	34
normalized size	1	1.	1.65	3.29	1.12	2.26	0.	0.	1.
time (sec)	N/A	0.037	0.033	0.036	0.815	0.269	0.	0.	3.424

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	0	63	0	0	0	41
normalized size	1	1.	1.	0.	1.37	0.	0.	0.	0.89
time (sec)	N/A	0.043	0.037	0.099	1.011	0.	0.	0.	3.986

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	0	55	0	0	0	36
normalized size	1	1.	1.	0.	1.41	0.	0.	0.	0.92
time (sec)	N/A	0.043	0.016	0.035	0.91	0.	0.	0.	4.01

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	0	55	0	0	0	36
normalized size	1	1.	1.	0.	1.41	0.	0.	0.	0.92
time (sec)	N/A	0.043	0.016	0.058	0.937	0.	0.	0.	3.9

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	0	55	0	0	0	36
normalized size	1	1.	1.	0.	1.41	0.	0.	0.	0.92
time (sec)	N/A	0.028	0.015	0.046	0.921	0.	0.	0.	2.798

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	0	47	0	0	0	34
normalized size	1	1.	1.	0.	1.34	0.	0.	0.	0.97
time (sec)	N/A	0.013	0.011	0.033	0.907	0.	0.	0.	1.559

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	19	20	20	0	0	14
normalized size	1	1.	1.	1.27	1.33	1.33	0.	0.	0.93
time (sec)	N/A	0.037	0.006	0.036	0.841	0.253	0.	0.	3.344

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	0	50	0	0	0	36
normalized size	1	1.	1.	0.	1.35	0.	0.	0.	0.97
time (sec)	N/A	0.041	0.015	0.056	0.943	0.	0.	0.	3.783

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	0	53	0	0	0	37
normalized size	1	1.	1.	0.	1.36	0.	0.	0.	0.95
time (sec)	N/A	0.041	0.018	0.029	0.936	0.	0.	0.	3.55

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	0	53	0	0	0	37
normalized size	1	1.	1.	0.	1.36	0.	0.	0.	0.95
time (sec)	N/A	0.041	0.018	0.029	0.95	0.	0.	0.	3.628

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	43	44	69	63	0	0	63
normalized size	1	1.	0.61	0.62	0.97	0.89	0.	0.	0.89
time (sec)	N/A	0.131	0.022	0.03	0.84	0.257	0.	0.	12.715

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	29	56	46	45	0	0	36
normalized size	1	1.	0.64	1.24	1.02	1.	0.	0.	0.8
time (sec)	N/A	0.081	0.016	0.05	0.814	0.256	0.	0.	7.28

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	25	27	32	0	27	14
normalized size	1	1.	1.	1.25	1.35	1.6	0.	1.35	0.7
time (sec)	N/A	0.038	0.005	0.033	0.794	0.265	0.	0.225	3.595

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	19	20	20	0	0	14
normalized size	1	1.	1.	1.27	1.33	1.33	0.	0.	0.93
time (sec)	N/A	0.037	0.005	0.	0.872	0.272	0.	0.	3.255

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	42	27	58	0	0	32
normalized size	1	1.	1.	1.11	0.71	1.53	0.	0.	0.84
time (sec)	N/A	0.077	0.02	0.05	1.073	0.257	0.	0.	5.799

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	55	68	34	82	0	0	61
normalized size	1	1.	0.77	0.96	0.48	1.15	0.	0.	0.86
time (sec)	N/A	0.124	0.044	0.069	1.246	0.266	0.	0.	9.701

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	107	96	45	111	0	0	92
normalized size	1	1.	1.03	0.92	0.43	1.07	0.	0.	0.88
time (sec)	N/A	0.18	0.111	0.072	1.077	0.261	0.	0.	16.033

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	76	67	45	92	0	0	61
normalized size	1	1.	1.03	0.91	0.61	1.24	0.	0.	0.82
time (sec)	N/A	0.112	0.064	0.049	1.055	0.293	0.	0.	10.223

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	46	32	51	46	0	0	39
normalized size	1	1.	1.07	0.74	1.19	1.07	0.	0.	0.91
time (sec)	N/A	0.064	0.033	0.068	1.048	0.281	0.	0.	5.512

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	59	59	47	127	0	0	58
normalized size	1	1.	0.89	0.89	0.71	1.92	0.	0.	0.88
time (sec)	N/A	0.108	0.118	0.063	1.075	0.252	0.	0.	9.394

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	71	88	47	157	0	0	87
normalized size	1	1.	0.74	0.92	0.49	1.64	0.	0.	0.91
time (sec)	N/A	0.154	0.23	0.053	1.092	0.264	0.	0.	14.227

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	A	A	A
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	11	10	12	0	10	14	15
normalized size	1	1.	0.69	0.62	0.75	0.	0.62	0.88	0.94
time (sec)	N/A	0.015	0.002	0.016	0.936	0.	0.141	0.235	2.325

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	96	193	428	173	0	184	0
normalized size	1	1.	0.47	0.95	2.11	0.85	0.	0.91	0.
time (sec)	N/A	0.33	0.152	0.084	0.976	0.264	0.	0.262	0.

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	83	140	350	136	0	144	0
normalized size	1	1.	0.59	1.	2.5	0.97	0.	1.03	0.
time (sec)	N/A	0.207	0.099	0.037	1.022	0.266	0.	0.239	0.

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	63	66	211	116	0	104	0
normalized size	1	1.	0.93	0.97	3.1	1.71	0.	1.53	0.
time (sec)	N/A	0.092	0.036	0.031	0.858	0.259	0.	0.254	0.

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	41	54	47	0	45	0
normalized size	1	1.	1.	1.	1.32	1.15	0.	1.1	0.
time (sec)	N/A	0.021	0.006	0.028	0.834	0.272	0.	0.253	0.

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.027	0.152	0.042	0.	0.	0.	0.	0.

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	78	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.084	0.36	0.025	0.	0.	0.	0.	0.

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	137	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.158	0.504	0.032	0.	0.	0.	0.	0.

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	0	0	0	232	0	0	116
normalized size	1	1.	0.	0.	0.	1.93	0.	0.	0.97
time (sec)	N/A	0.156	0.252	0.032	0.	0.277	0.	0.	17.602

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	0	0	0	144	0	0	90
normalized size	1	1.	0.	0.	0.	1.57	0.	0.	0.98
time (sec)	N/A	0.093	0.555	0.02	0.	0.269	0.	0.	8.627

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	0	0	68	0	0	42
normalized size	1	1.	1.	0.	0.	1.55	0.	0.	0.95
time (sec)	N/A	0.016	0.003	0.019	0.	0.26	0.	0.	1.701

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.026	0.433	0.017	0.	0.	0.	0.	0.

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	133	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.483	1.579	0.027	0.	0.	0.	0.	0.

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	263	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.772	2.034	0.035	0.	0.	0.	0.	0.

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	0	0	0	220	0	0	168
normalized size	1	1.	0.	0.	0.	1.2	0.	0.	0.92
time (sec)	N/A	0.308	0.353	0.039	0.	0.253	0.	0.	31.024

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	0	0	0	197	0	0	122
normalized size	1	1.	0.	0.	0.	1.43	0.	0.	0.88
time (sec)	N/A	0.257	0.274	0.027	0.	0.261	0.	0.	23.78

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	0	0	0	178	0	0	88
normalized size	1	1.	0.	0.	0.	1.8	0.	0.	0.89
time (sec)	N/A	0.192	0.194	0.026	0.	0.259	0.	0.	17.305

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	0	0	0	120	0	0	70
normalized size	1	1.	0.	0.	0.	1.5	0.	0.	0.88
time (sec)	N/A	0.117	0.41	0.021	0.	0.262	0.	0.	9.486

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	0	0	55	0	0	32
normalized size	1	1.	1.	0.	0.	1.45	0.	0.	0.84
time (sec)	N/A	0.019	0.003	0.019	0.	0.278	0.	0.	1.962

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.141	0.327	0.021	0.	0.	0.	0.	0.

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	36	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.142	0.252	0.042	0.	0.	0.	0.	0.

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	26	29	26	26	34	28	34
normalized size	1	1.	0.65	0.72	0.65	0.65	0.85	0.7	0.85
time (sec)	N/A	0.024	0.006	0.004	0.767	0.253	0.464	0.278	2.34

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	241	517	0	328	0	0	287
normalized size	1	1.	0.83	1.78	0.	1.13	0.	0.	0.99
time (sec)	N/A	0.517	0.226	0.054	0.	0.261	0.	0.	59.967

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	269	179	359	0	231	0	0	258
normalized size	1	1.	0.67	1.33	0.	0.86	0.	0.	0.96
time (sec)	N/A	0.45	0.177	0.04	0.	0.279	0.	0.	48.734

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	128	227	0	154	0	0	211
normalized size	1	1.	0.56	0.99	0.	0.67	0.	0.	0.92
time (sec)	N/A	0.374	0.123	0.034	0.	0.255	0.	0.	34.145

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	82	126	0	96	0	0	109
normalized size	1	1.	0.68	1.05	0.	0.8	0.	0.	0.91
time (sec)	N/A	0.191	0.076	0.03	0.	0.27	0.	0.	15.992

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	52	0	54	0	0	32
normalized size	1	1.	1.	1.27	0.	1.32	0.	0.	0.78
time (sec)	N/A	0.051	0.015	0.021	0.	0.258	0.	0.	5.455

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	47	0	55	0	0	34
normalized size	1	1.	1.	1.15	0.	1.34	0.	0.	0.83
time (sec)	N/A	0.204	0.019	0.027	0.	0.262	0.	0.	18.546

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	68	80	0	81	0	0	0
normalized size	1	1.	1.	1.18	0.	1.19	0.	0.	0.
time (sec)	N/A	0.636	0.09	0.033	0.	0.254	0.	0.	0.

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	115	226	0	149	0	0	0
normalized size	1	1.	0.69	1.36	0.	0.9	0.	0.	0.
time (sec)	N/A	1.212	0.167	0.042	0.	0.273	0.	0.	0.

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	415	415	195	343	0	306	0	0	415
normalized size	1	1.	0.47	0.83	0.	0.74	0.	0.	1.
time (sec)	N/A	0.791	0.242	0.097	0.	0.275	0.	0.	68.017

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	148	228	0	242	0	0	287
normalized size	1	1.	0.51	0.78	0.	0.83	0.	0.	0.99
time (sec)	N/A	0.528	0.165	0.043	0.	0.273	0.	0.	50.272

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	131	175	0	205	0	0	201
normalized size	1	1.	0.64	0.85	0.	1.	0.	0.	0.98
time (sec)	N/A	0.373	0.122	0.039	0.	0.252	0.	0.	35.205

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	89	93	0	167	0	0	105
normalized size	1	1.	0.8	0.84	0.	1.5	0.	0.	0.95
time (sec)	N/A	0.199	0.049	0.031	0.	0.327	0.	0.	21.634

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	65	0	116	0	0	53
normalized size	1	1.	1.	1.05	0.	1.87	0.	0.	0.85
time (sec)	N/A	0.075	0.023	0.029	0.	0.31	0.	0.	8.508

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.028	0.05	0.029	0.	0.	0.	0.	0.

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.068	0.174	0.043	0.	0.	0.	0.	0.

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.06	0.443	0.053	0.	0.	0.	0.	0.

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	228	0	0	375	0	0	252
normalized size	1	1.	0.95	0.	0.	1.57	0.	0.	1.05
time (sec)	N/A	0.345	0.649	0.054	0.	0.281	0.	0.	36.

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	201	0	0	336	0	0	190
normalized size	1	1.	1.09	0.	0.	1.83	0.	0.	1.03
time (sec)	N/A	0.268	0.553	0.043	0.	0.288	0.	0.	28.484

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	178	0	0	292	0	0	144
normalized size	1	1.	1.25	0.	0.	2.06	0.	0.	1.01
time (sec)	N/A	0.208	1.883	0.036	0.	0.267	0.	0.	20.528

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	139	0	0	228	0	0	94
normalized size	1	1.	1.51	0.	0.	2.48	0.	0.	1.02
time (sec)	N/A	0.098	0.351	0.033	0.	0.276	0.	0.	8.512

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	67	0	0	149	0	0	42
normalized size	1	1.	1.52	0.	0.	3.39	0.	0.	0.95
time (sec)	N/A	0.016	0.006	0.026	0.	0.269	0.	0.	1.74

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.029	0.04	0.026	0.	0.	0.	0.	0.

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.07	0.24	0.039	0.	0.	0.	0.	0.

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.061	0.04	0.056	0.	0.	0.	0.	0.

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.078	0.378	0.048	0.	0.	0.	0.	0.

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.083	0.196	0.041	0.	0.	0.	0.	0.

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	36	117	49	53	0	0	39
normalized size	1	1.	0.88	2.85	1.2	1.29	0.	0.	0.95
time (sec)	N/A	0.041	0.02	0.049	0.865	0.266	0.	0.	4.009

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.064	0.044	0.059	0.	0.	0.	0.	0.

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.065	0.075	0.064	0.	0.	0.	0.	0.

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.067	0.077	0.07	0.	0.	0.	0.	0.

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.082	0.052	0.044	0.	0.	0.	0.	0.

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	0	0	0	0	0	0	192
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.93
time (sec)	N/A	0.279	4.201	0.023	0.	0.	0.	0.	28.28

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	0	0	0	0	0	0	141
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.194	3.866	0.056	0.	0.	0.	0.	19.5

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	91	0	0	0	0	0	90
normalized size	1	1.	0.92	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.103	0.243	0.043	0.	0.	0.	0.	10.229

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	0	0	0	0	0	42
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.017	0.011	0.028	0.	0.	0.	0.	2.034

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.033	0.035	0.021	0.	0.	0.	0.	0.

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.07	0.033	0.061	0.	0.	0.	0.	0.

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.069	0.037	0.02	0.	0.	0.	0.	0.

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	61	0	0	80	0	0	58
normalized size	1	1.	1.	0.	0.	1.31	0.	0.	0.95
time (sec)	N/A	0.105	0.063	0.069	0.	0.262	0.	0.	5.485

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	104	579	8798	632	796	196	31
normalized size	1	1.	3.35	18.68	283.81	20.39	25.68	6.32	1.
time (sec)	N/A	0.111	0.089	0.03	1.708	0.277	1.258	0.249	6.016

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	88	396	6249	437	558	167	29
normalized size	1	1.	2.84	12.77	201.58	14.1	18.	5.39	0.94
time (sec)	N/A	0.11	0.064	0.022	1.481	0.252	0.998	0.227	5.873

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	72	249	4126	281	366	139	112
normalized size	1	1.	0.57	1.98	32.75	2.23	2.9	1.1	0.89
time (sec)	N/A	0.406	0.048	0.016	1.53	0.291	0.788	0.23	24.681

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	56	138	2430	162	214	111	76
normalized size	1	1.	0.62	1.52	26.7	1.78	2.35	1.22	0.84
time (sec)	N/A	0.278	0.049	0.01	1.37	0.246	0.603	0.251	15.989

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	40	63	1160	81	100	82	49
normalized size	1	1.	0.65	1.02	18.71	1.31	1.61	1.32	0.79
time (sec)	N/A	0.164	0.031	0.01	1.04	0.261	0.456	0.255	9.046

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	36	34	47	36	34	19
normalized size	1	1.	1.	1.33	1.26	1.74	1.33	1.26	0.7
time (sec)	N/A	0.057	0.01	0.003	0.766	0.252	0.306	0.229	3.721

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	23	0	43	0	0	19
normalized size	1	1.	1.	1.05	0.	1.95	0.	0.	0.86
time (sec)	N/A	0.102	0.01	0.026	0.	0.244	0.	0.	4.62

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	47	62	0	135	0	0	46
normalized size	1	1.	0.89	1.17	0.	2.55	0.	0.	0.87
time (sec)	N/A	0.205	0.06	0.042	0.	0.262	0.	0.	8.856

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	64	104	0	247	0	0	76
normalized size	1	1.	0.74	1.2	0.	2.84	0.	0.	0.87
time (sec)	N/A	0.305	0.098	0.056	0.	0.268	0.	0.	14.018

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	79	146	0	394	0	0	107
normalized size	1	1.	0.65	1.21	0.	3.26	0.	0.	0.88
time (sec)	N/A	0.413	0.106	0.079	0.	0.257	0.	0.	20.524

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	95	188	0	581	0	0	32
normalized size	1	1.	3.06	6.06	0.	18.74	0.	0.	1.03
time (sec)	N/A	0.1	0.101	0.105	0.	0.261	0.	0.	5.547

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	111	230	0	805	0	0	31
normalized size	1	1.	3.58	7.42	0.	25.97	0.	0.	1.
time (sec)	N/A	0.099	0.123	0.139	0.	0.252	0.	0.	5.555

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	155	1686	10247	803	0	266	48
normalized size	1	1.	3.16	34.41	209.12	16.39	0.	5.43	0.98
time (sec)	N/A	0.106	0.217	0.374	1.774	0.253	0.	0.267	5.8

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	139	1209	7484	590	0	238	48
normalized size	1	1.	2.84	24.67	152.73	12.04	0.	4.86	0.98
time (sec)	N/A	0.105	0.221	0.164	1.632	0.261	0.	0.252	5.722

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	123	814	5148	414	0	209	165
normalized size	1	1.	0.69	4.55	28.76	2.31	0.	1.17	0.92
time (sec)	N/A	0.533	0.248	0.105	1.525	0.271	0.	0.317	38.

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	107	501	3239	277	0	181	133
normalized size	1	1.	0.74	3.46	22.34	1.91	0.	1.25	0.92
time (sec)	N/A	0.375	0.166	0.071	1.26	0.261	0.	0.323	26.952

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	88	270	1755	177	0	153	100
normalized size	1	1.	0.79	2.43	15.81	1.59	0.	1.38	0.9
time (sec)	N/A	0.249	0.137	0.053	1.157	0.27	0.	0.265	17.363

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	77	121	699	123	0	126	66
normalized size	1	1.	1.	1.57	9.08	1.6	0.	1.64	0.86
time (sec)	N/A	0.138	0.069	0.042	1.035	0.283	0.	0.232	9.234

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	44	78	51	0	51	41
normalized size	1	1.	1.	1.	1.77	1.16	0.	1.16	0.93
time (sec)	N/A	0.026	0.008	0.027	0.926	0.262	0.	0.237	2.618

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	63	71	0	132	0	0	58
normalized size	1	1.	0.94	1.06	0.	1.97	0.	0.	0.87
time (sec)	N/A	0.131	0.07	0.059	0.	0.276	0.	0.	8.223

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	81	114	0	246	0	0	92
normalized size	1	1.	0.79	1.12	0.	2.41	0.	0.	0.9
time (sec)	N/A	0.234	0.138	0.059	0.	0.254	0.	0.	14.298

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	97	156	0	394	0	0	124
normalized size	1	1.	0.71	1.15	0.	2.9	0.	0.	0.91
time (sec)	N/A	0.344	0.116	0.078	0.	0.268	0.	0.	21.767

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	113	198	0	581	0	0	156
normalized size	1	1.	0.66	1.16	0.	3.42	0.	0.	0.92
time (sec)	N/A	0.46	0.158	0.102	0.	0.253	0.	0.	31.428

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	129	240	0	805	0	0	49
normalized size	1	1.	2.63	4.9	0.	16.43	0.	0.	1.
time (sec)	N/A	0.101	0.159	0.135	0.	0.257	0.	0.	5.378

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	152	282	0	1067	0	0	49
normalized size	1	1.	3.1	5.76	0.	21.78	0.	0.	1.
time (sec)	N/A	0.103	0.157	0.171	0.	0.287	0.	0.	5.384

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	61	0	0	96	0	0	58
normalized size	1	1.	1.	0.	0.	1.57	0.	0.	0.95
time (sec)	N/A	0.104	0.071	0.073	0.	0.257	0.	0.	6.142

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	104	857	1712	929	1171	0	31
normalized size	1	1.	3.35	27.65	55.23	29.97	37.77	0.	1.
time (sec)	N/A	0.105	0.117	0.033	1.134	0.265	1.813	0.	7.108

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	88	584	1180	640	823	0	29
normalized size	1	1.	2.84	18.84	38.06	20.65	26.55	0.	0.94
time (sec)	N/A	0.107	0.086	0.028	1.187	0.268	1.383	0.	6.885

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	72	365	749	408	537	1	109
normalized size	1	1.	0.58	2.94	6.04	3.29	4.33	0.01	0.88
time (sec)	N/A	0.436	0.06	0.02	1.182	0.255	1.068	0.255	28.381

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	56	200	416	232	306	952	83
normalized size	1	1.	0.58	2.08	4.33	2.42	3.19	9.92	0.86
time (sec)	N/A	0.322	0.053	0.013	1.183	0.262	0.795	0.248	18.994

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	40	89	180	113	144	1203	49
normalized size	1	1.	0.65	1.44	2.9	1.82	2.32	19.4	0.79
time (sec)	N/A	0.209	0.041	0.013	1.225	0.295	0.565	0.25	11.24

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	48	34	63	46	34	19
normalized size	1	1.	1.	1.78	1.26	2.33	1.7	1.26	0.7
time (sec)	N/A	0.102	0.013	0.006	0.886	0.287	0.392	0.244	5.495

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	0	0	59	0	0	19
normalized size	1	1.	1.	0.	0.	2.68	0.	0.	0.86
time (sec)	N/A	0.103	0.011	0.04	0.	0.278	0.	0.	4.894

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	47	0	0	198	0	0	46
normalized size	1	1.	0.89	0.	0.	3.74	0.	0.	0.87
time (sec)	N/A	0.202	0.049	0.06	0.	0.26	0.	0.	9.226

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	64	0	0	363	0	0	76
normalized size	1	1.	0.74	0.	0.	4.17	0.	0.	0.87
time (sec)	N/A	0.305	0.074	0.095	0.	0.306	0.	0.	14.921

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	79	0	0	582	0	0	107
normalized size	1	1.	0.65	0.	0.	4.81	0.	0.	0.88
time (sec)	N/A	0.411	0.1	0.13	0.	0.26	0.	0.	21.981

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	95	0	0	859	0	0	32
normalized size	1	1.	3.06	0.	0.	27.71	0.	0.	1.03
time (sec)	N/A	0.098	0.108	0.188	0.	0.292	0.	0.	5.931

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	111	0	0	1192	0	0	31
normalized size	1	1.	3.58	0.	0.	38.45	0.	0.	1.
time (sec)	N/A	0.099	0.13	0.287	0.	0.283	0.	0.	6.035

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	79	0	0	159	0	0	48
normalized size	1	1.	1.61	0.	0.	3.24	0.	0.	0.98
time (sec)	N/A	0.105	0.108	0.05	0.	0.296	0.	0.	5.498

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	0	0	73	0	0	48
normalized size	1	1.	1.	0.	0.	1.49	0.	0.	0.98
time (sec)	N/A	0.061	0.038	0.026	0.	0.306	0.	0.	3.878

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	0	0	72	0	0	46
normalized size	1	1.	1.	0.	0.	1.53	0.	0.	0.98
time (sec)	N/A	0.019	0.022	0.018	0.	0.26	0.	0.	1.793

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	61	0	0	171	0	0	48
normalized size	1	1.	1.24	0.	0.	3.49	0.	0.	0.98
time (sec)	N/A	0.101	0.1	0.049	0.	0.267	0.	0.	5.275

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	63	0	0	200	0	0	49
normalized size	1	1.	1.29	0.	0.	4.08	0.	0.	1.
time (sec)	N/A	0.1	0.114	0.053	0.	0.251	0.	0.	5.298

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	93	0	0	333	0	0	49
normalized size	1	1.	1.9	0.	0.	6.8	0.	0.	1.
time (sec)	N/A	0.1	0.248	0.071	0.	0.278	0.	0.	5.313

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	42	0	58	57	76	1	54
normalized size	1	1.	0.66	0.	0.91	0.89	1.19	0.02	0.84
time (sec)	N/A	0.067	0.033	0.006	0.782	0.247	1.199	0.664	6.718

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	60	0	84	78	0	1	88
normalized size	1	1.	0.6	0.	0.84	0.78	0.	0.01	0.88
time (sec)	N/A	0.115	0.044	0.005	0.953	0.253	0.	0.305	12.247

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	0	0	0	0	0	44
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.073	0.042	0.087	0.	0.	0.	0.	5.864

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	108	634	0	329	0	0	29
normalized size	1	1.	3.72	21.86	0.	11.34	0.	0.	1.
time (sec)	N/A	0.073	0.124	0.049	0.	0.279	0.	0.	5.907

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	92	438	0	236	0	0	27
normalized size	1	1.	3.29	15.64	0.	8.43	0.	0.	0.96
time (sec)	N/A	0.074	0.103	0.041	0.	0.268	0.	0.	5.877

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	76	279	0	162	0	0	99
normalized size	1	1.	0.64	2.34	0.	1.36	0.	0.	0.83
time (sec)	N/A	0.219	0.087	0.037	0.	0.248	0.	0.	17.879

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	58	158	0	104	0	0	70
normalized size	1	1.	0.68	1.86	0.	1.22	0.	0.	0.82
time (sec)	N/A	0.137	0.058	0.03	0.	0.25	0.	0.	10.665

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	42	71	0	69	0	0	37
normalized size	1	1.	0.91	1.54	0.	1.5	0.	0.	0.8
time (sec)	N/A	0.086	0.026	0.023	0.	0.252	0.	0.	6.167

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	22	0	27	0	0	17
normalized size	1	1.	1.	1.1	0.	1.35	0.	0.	0.85
time (sec)	N/A	0.071	0.01	0.026	0.	0.28	0.	0.	4.761

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	26	34	42	34	34	17
normalized size	1	1.	1.	1.04	1.36	1.68	1.36	1.36	0.68
time (sec)	N/A	0.066	0.011	0.003	0.776	0.26	0.713	0.255	5.359

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	41	106	0	69	44	0	41
normalized size	1	1.	0.72	1.86	0.	1.21	0.77	0.	0.72
time (sec)	N/A	0.139	0.027	0.03	0.	0.251	0.271	0.	10.931

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	60	169	0	128	102	0	71
normalized size	1	1.	0.67	1.88	0.	1.42	1.13	0.	0.79
time (sec)	N/A	0.218	0.037	0.042	0.	0.251	0.343	0.	18.386

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	76	243	0	203	177	0	100
normalized size	1	1.	0.62	1.99	0.	1.66	1.45	0.	0.82
time (sec)	N/A	0.297	0.059	0.053	0.	0.255	0.412	0.	27.571

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	92	329	0	296	272	0	27
normalized size	1	1.	3.17	11.34	0.	10.21	9.38	0.	0.93
time (sec)	N/A	0.07	0.068	0.069	0.	0.25	0.478	0.	5.806

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	102	427	0	408	388	0	26
normalized size	1	1.	3.64	15.25	0.	14.57	13.86	0.	0.93
time (sec)	N/A	0.07	0.068	0.083	0.	0.259	0.547	0.	5.798

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	61	0	0	0	0	0	56
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.075	0.062	0.098	0.	0.	0.	0.	6.065

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	112	961	0	628	0	0	32
normalized size	1	1.	3.61	31.	0.	20.26	0.	0.	1.03
time (sec)	N/A	0.075	0.124	0.09	0.	0.26	0.	0.	6.359

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	96	646	0	447	0	0	31
normalized size	1	1.	3.1	20.84	0.	14.42	0.	0.	1.
time (sec)	N/A	0.074	0.148	0.066	0.	0.264	0.	0.	6.248

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	80	395	0	304	0	0	107
normalized size	1	1.	0.66	3.26	0.	2.51	0.	0.	0.88
time (sec)	N/A	0.281	0.127	0.055	0.	0.259	0.	0.	22.056

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	63	208	0	196	0	0	76
normalized size	1	1.	0.72	2.39	0.	2.25	0.	0.	0.87
time (sec)	N/A	0.195	0.087	0.042	0.	0.259	0.	0.	14.107

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	47	86	0	130	0	0	46
normalized size	1	1.	0.89	1.62	0.	2.45	0.	0.	0.87
time (sec)	N/A	0.115	0.045	0.033	0.	0.252	0.	0.	7.934

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	23	0	42	0	0	20
normalized size	1	1.	1.	1.05	0.	1.91	0.	0.	0.91
time (sec)	N/A	0.071	0.009	0.029	0.	0.265	0.	0.	4.865

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	26	34	73	54	34	20
normalized size	1	1.	1.	0.96	1.26	2.7	2.	1.26	0.74
time (sec)	N/A	0.067	0.015	0.003	0.78	0.245	0.83	0.246	5.588

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	47	185	136	135	82	0	49
normalized size	1	1.	0.76	2.98	2.19	2.18	1.32	0.	0.79
time (sec)	N/A	0.142	0.043	0.054	0.825	0.239	0.397	0.	11.278

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	64	301	281	243	189	1	76
normalized size	1	1.	0.7	3.31	3.09	2.67	2.08	0.01	0.84
time (sec)	N/A	0.217	0.05	0.087	1.074	0.3	0.53	0.27	19.034

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	73	444	471	387	333	0	112
normalized size	1	1.	0.58	3.52	3.74	3.07	2.64	0.	0.89
time (sec)	N/A	0.301	0.063	0.128	0.783	0.276	0.66	0.	28.824

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	89	609	710	567	518	0	31
normalized size	1	1.	2.87	19.65	22.9	18.29	16.71	0.	1.
time (sec)	N/A	0.072	0.07	0.184	0.844	0.277	0.827	0.	5.936

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	105	797	999	787	745	0	29
normalized size	1	1.	3.39	25.71	32.23	25.39	24.03	0.	0.94
time (sec)	N/A	0.071	0.089	0.25	0.792	0.294	1.164	0.	5.912

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	145	1173	0	795	0	0	48
normalized size	1	1.	2.96	23.94	0.	16.22	0.	0.	0.98
time (sec)	N/A	0.076	0.151	0.124	0.	0.274	0.	0.	5.892

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	129	826	0	591	0	0	48
normalized size	1	1.	2.63	16.86	0.	12.06	0.	0.	0.98
time (sec)	N/A	0.079	0.226	0.079	0.	0.264	0.	0.	5.721

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	113	543	0	425	0	0	156
normalized size	1	1.	0.66	3.19	0.	2.5	0.	0.	0.92
time (sec)	N/A	0.384	0.172	0.064	0.	0.27	0.	0.	34.128

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	97	324	0	297	0	0	124
normalized size	1	1.	0.71	2.38	0.	2.18	0.	0.	0.91
time (sec)	N/A	0.282	0.131	0.051	0.	0.256	0.	0.	24.607

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	79	169	0	204	0	0	92
normalized size	1	1.	0.77	1.66	0.	2.	0.	0.	0.9
time (sec)	N/A	0.192	0.105	0.041	0.	0.279	0.	0.	16.663

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	63	74	0	147	0	0	58
normalized size	1	1.	0.94	1.1	0.	2.19	0.	0.	0.87
time (sec)	N/A	0.109	0.041	0.029	0.	0.27	0.	0.	9.753

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	35	0	55	0	0	42
normalized size	1	1.	1.	0.76	0.	1.2	0.	0.	0.91
time (sec)	N/A	0.092	0.013	0.037	0.	0.258	0.	0.	7.391

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	81	76	0	161	0	0	66
normalized size	1	1.	1.	0.94	0.	1.99	0.	0.	0.81
time (sec)	N/A	0.17	0.069	0.065	0.	0.273	0.	0.	13.748

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	93	109	0	271	0	0	100
normalized size	1	1.	0.81	0.95	0.	2.36	0.	0.	0.87
time (sec)	N/A	0.254	0.216	0.101	0.	0.286	0.	0.	22.11

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	111	142	0	410	0	0	133
normalized size	1	1.	0.74	0.95	0.	2.75	0.	0.	0.89
time (sec)	N/A	0.347	0.139	0.144	0.	0.304	0.	0.	32.09

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	127	175	0	587	0	0	165
normalized size	1	1.	0.69	0.96	0.	3.21	0.	0.	0.9
time (sec)	N/A	0.438	0.186	0.197	0.	0.286	0.	0.	44.221

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	143	208	0	802	0	0	46
normalized size	1	1.	2.92	4.24	0.	16.37	0.	0.	0.94
time (sec)	N/A	0.073	0.262	0.273	0.	0.329	0.	0.	5.881

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	159	241	0	1054	0	0	46
normalized size	1	1.	3.24	4.92	0.	21.51	0.	0.	0.94
time (sec)	N/A	0.075	0.327	0.347	0.	0.34	0.	0.	5.928

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	61	0	0	0	0	0	56
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.076	0.07	0.108	0.	0.	0.	0.	7.097

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	112	0	0	926	0	0	32
normalized size	1	1.	3.61	0.	0.	29.87	0.	0.	1.03
time (sec)	N/A	0.077	0.18	0.138	0.	0.263	0.	0.	7.535

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	96	0	0	657	0	0	31
normalized size	1	1.	3.1	0.	0.	21.19	0.	0.	1.
time (sec)	N/A	0.078	0.119	0.106	0.	0.279	0.	0.	7.754

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	80	0	0	446	0	0	107
normalized size	1	1.	0.66	0.	0.	3.69	0.	0.	0.88
time (sec)	N/A	0.313	0.103	0.081	0.	0.284	0.	0.	26.785

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	63	0	0	288	0	0	76
normalized size	1	1.	0.72	0.	0.	3.31	0.	0.	0.87
time (sec)	N/A	0.227	0.134	0.063	0.	0.274	0.	0.	17.78

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	47	0	0	190	0	0	46
normalized size	1	1.	0.89	0.	0.	3.58	0.	0.	0.87
time (sec)	N/A	0.149	0.059	0.044	0.	0.281	0.	0.	10.525

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	0	0	57	0	0	20
normalized size	1	1.	1.	0.	0.	2.59	0.	0.	0.91
time (sec)	N/A	0.073	0.011	0.043	0.	0.282	0.	0.	5.426

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	26	34	104	66	34	20
normalized size	1	1.	1.	0.96	1.26	3.85	2.44	1.26	0.74
time (sec)	N/A	0.069	0.018	0.003	0.863	0.259	0.977	0.227	6.386

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	47	261	194	200	114	0	49
normalized size	1	1.	0.76	4.21	3.13	3.23	1.84	0.	0.79
time (sec)	N/A	0.142	0.054	0.088	0.793	0.253	0.514	0.	13.514

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	64	434	405	358	270	0	83
normalized size	1	1.	0.67	4.52	4.22	3.73	2.81	0.	0.86
time (sec)	N/A	0.227	0.066	0.159	0.793	0.262	0.709	0.	22.31

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	73	641	684	571	484	0	109
normalized size	1	1.	0.59	5.21	5.56	4.64	3.93	0.	0.89
time (sec)	N/A	0.308	0.066	0.248	0.84	0.295	0.961	0.	32.708

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	89	889	1040	838	760	0	31
normalized size	1	1.	2.87	28.68	33.55	27.03	24.52	0.	1.
time (sec)	N/A	0.072	0.089	0.382	0.829	0.322	1.593	0.	6.611

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	105	733	1465	1165	1096	0	29
normalized size	1	1.	3.39	23.65	47.26	37.58	35.35	0.	0.94
time (sec)	N/A	0.072	0.117	0.063	0.827	0.399	4.791	0.	6.668

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	78	0	0	271	0	0	48
normalized size	1	1.	1.59	0.	0.	5.53	0.	0.	0.98
time (sec)	N/A	0.075	0.265	0.049	0.	0.258	0.	0.	6.065

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	73	0	0	209	0	0	48
normalized size	1	1.	1.49	0.	0.	4.27	0.	0.	0.98
time (sec)	N/A	0.046	0.085	0.032	0.	0.26	0.	0.	4.265

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	72	0	0	196	0	0	46
normalized size	1	1.	1.53	0.	0.	4.17	0.	0.	0.98
time (sec)	N/A	0.018	0.073	0.026	0.	0.269	0.	0.	1.865

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	0	0	73	0	0	44
normalized size	1	1.	1.	0.	0.	1.49	0.	0.	0.9
time (sec)	N/A	0.078	0.037	0.051	0.	0.266	0.	0.	5.902

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	0	0	73	0	0	46
normalized size	1	1.	1.	0.	0.	1.49	0.	0.	0.94
time (sec)	N/A	0.077	0.044	0.059	0.	0.276	0.	0.	5.995

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	79	0	0	209	0	0	46
normalized size	1	1.	1.61	0.	0.	4.27	0.	0.	0.94
time (sec)	N/A	0.076	0.116	0.089	0.	0.278	0.	0.	5.979

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	0	0	0	0	0	0	53
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.064	0.079	0.086	0.	0.	0.	0.	7.102

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	54	0	0	0	0	0	48
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.064	0.033	0.055	0.	0.	0.	0.	6.618

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	54	0	0	0	0	0	48
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.063	0.03	0.079	0.	0.	0.	0.	6.016

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	0	0	0	0	0	0	48
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.04	0.064	0.062	0.	0.	0.	0.	4.541

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	0	0	0	0	0	46
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.02	0.025	0.029	0.	0.	0.	0.	2.271

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	26	30	30	0	0	19
normalized size	1	1.	1.	1.18	1.36	1.36	0.	0.	0.86
time (sec)	N/A	0.057	0.01	0.056	0.876	0.28	0.	0.	4.984

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	52	0	0	0	0	0	48
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.06	0.03	0.084	0.	0.	0.	0.	5.87

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	54	0	0	0	0	0	49
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.06	0.029	0.036	0.	0.	0.	0.	6.19

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	54	0	0	0	0	0	49
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.06	0.029	0.034	0.	0.	0.	0.	6.153

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	112	113	174	157	0	0	31
normalized size	1	1.	3.5	3.53	5.44	4.91	0.	0.	0.97
time (sec)	N/A	0.064	0.055	0.033	0.807	0.277	0.	0.	6.495

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	94	95	146	132	0	0	29
normalized size	1	1.	3.03	3.06	4.71	4.26	0.	0.	0.94
time (sec)	N/A	0.064	0.048	0.033	0.8	0.261	0.	0.	6.322

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	76	77	117	108	0	0	119
normalized size	1	1.	0.55	0.56	0.85	0.79	0.	0.	0.87
time (sec)	N/A	0.275	0.042	0.032	0.794	0.272	0.	0.	31.312

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	58	59	89	84	0	0	85
normalized size	1	1.	0.58	0.59	0.89	0.84	0.	0.	0.85
time (sec)	N/A	0.193	0.037	0.03	0.828	0.259	0.	0.	21.131

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	40	74	61	59	0	0	49
normalized size	1	1.	0.63	1.17	0.97	0.94	0.	0.	0.78
time (sec)	N/A	0.124	0.032	0.083	0.822	0.248	0.	0.	12.176

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	32	36	42	0	36	19
normalized size	1	1.	1.	1.19	1.33	1.56	0.	1.33	0.7
time (sec)	N/A	0.057	0.01	0.051	0.777	0.258	0.	0.23	5.718

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	26	30	30	0	0	19
normalized size	1	1.	1.	1.18	1.36	1.36	0.	0.	0.86
time (sec)	N/A	0.056	0.009	0.	0.855	0.262	0.	0.	5.228

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	50	60	0	84	0	0	46
normalized size	1	1.	0.89	1.07	0.	1.5	0.	0.	0.82
time (sec)	N/A	0.119	0.064	0.069	0.	0.254	0.	0.	10.211

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	78	97	0	113	0	0	83
normalized size	1	1.	0.78	0.97	0.	1.13	0.	0.	0.83
time (sec)	N/A	0.188	0.072	0.1	0.	0.262	0.	0.	16.296

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	95	134	0	136	0	0	117
normalized size	1	1.	0.68	0.96	0.	0.98	0.	0.	0.84
time (sec)	N/A	0.268	0.089	0.037	0.	0.266	0.	0.	24.544

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	113	171	0	161	0	0	32
normalized size	1	1.	3.53	5.34	0.	5.03	0.	0.	1.
time (sec)	N/A	0.066	0.104	0.041	0.	0.264	0.	0.	6.27

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	131	208	0	185	0	0	31
normalized size	1	1.	4.23	6.71	0.	5.97	0.	0.	1.
time (sec)	N/A	0.066	0.118	0.043	0.	0.256	0.	0.	6.214

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	0	36	0	57	0	0	41
normalized size	1	1.	0.	0.77	0.	1.21	0.	0.	0.87
time (sec)	N/A	0.078	0.057	0.111	0.	0.262	0.	0.	7.316

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	0	34	0	54	0	0	41
normalized size	1	1.	0.	0.72	0.	1.15	0.	0.	0.87
time (sec)	N/A	0.08	0.054	0.099	0.	0.276	0.	0.	7.674

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	518	518	318	1547	2430	749	0	1	493
normalized size	1	1.	0.61	2.99	4.69	1.45	0.	0.	0.95
time (sec)	N/A	1.549	0.792	0.077	1.096	0.283	0.	0.246	131.775

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	389	389	220	998	1755	460	0	872	372
normalized size	1	1.	0.57	2.57	4.51	1.18	0.	2.24	0.96
time (sec)	N/A	1.07	0.63	0.065	1.057	0.257	0.	0.248	95.445

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	148	582	1160	315	0	578	241
normalized size	1	1.	0.57	2.26	4.5	1.22	0.	2.24	0.93
time (sec)	N/A	0.713	0.304	0.053	0.965	0.289	0.	0.249	60.953

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	105	309	699	189	0	351	158
normalized size	1	1.	0.62	1.82	4.11	1.11	0.	2.06	0.93
time (sec)	N/A	0.445	0.209	0.043	0.891	0.267	0.	0.249	36.812

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	74	127	317	135	0	174	73
normalized size	1	1.	0.91	1.57	3.91	1.67	0.	2.15	0.9
time (sec)	N/A	0.197	0.097	0.034	0.823	0.26	0.	0.255	15.003

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	44	78	51	0	51	41
normalized size	1	1.	1.	1.	1.77	1.16	0.	1.16	0.93
time (sec)	N/A	0.024	0.008	0.002	0.781	0.27	0.	0.259	2.685

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.098	0.337	0.049	0.	0.	0.	0.	0.

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	109	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.249	0.939	0.051	0.	0.	0.	0.	0.

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	200	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.51	1.289	0.057	0.	0.	0.	0.	0.

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	0	0	0	327	0	0	160
normalized size	1	1.	0.	0.	0.	1.85	0.	0.	0.9
time (sec)	N/A	0.273	0.732	0.053	0.	0.256	0.	0.	35.859

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	0	0	0	254	0	0	114
normalized size	1	1.	0.	0.	0.	2.02	0.	0.	0.9
time (sec)	N/A	0.186	0.458	0.04	0.	0.245	0.	0.	24.3

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	0	0	0	144	0	0	85
normalized size	1	1.	0.	0.	0.	1.57	0.	0.	0.92
time (sec)	N/A	0.11	0.583	0.027	0.	0.256	0.	0.	11.222

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	0	0	62	0	0	36
normalized size	1	1.	1.	0.	0.	1.55	0.	0.	0.9
time (sec)	N/A	0.015	0.003	0.019	0.	0.234	0.	0.	1.696

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.035	0.583	0.052	0.	0.	0.	0.	0.

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	153	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.548	3.098	0.053	0.	0.	0.	0.	0.

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	66	106	0	120	0	0	65
normalized size	1	1.	0.93	1.49	0.	1.69	0.	0.	0.92
time (sec)	N/A	0.621	0.086	0.043	0.	0.283	0.	0.	27.42

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	116	196	0	242	0	0	0
normalized size	1	1.	1.	1.69	0.	2.09	0.	0.	0.
time (sec)	N/A	1.562	0.318	0.044	0.	0.279	0.	0.	0.

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	0	521	0	749	0	0	0
normalized size	1	1.	0.	1.95	0.	2.81	0.	0.	0.
time (sec)	N/A	3.075	0.553	0.069	0.	0.292	0.	0.	0.

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	0	952	0	1858	0	0	0
normalized size	1	1.	0.	2.07	0.	4.04	0.	0.	0.
time (sec)	N/A	6.212	0.312	0.115	0.	0.284	0.	0.	0.

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	468	1146	0	861	0	0	311
normalized size	1	1.	1.35	3.31	0.	2.49	0.	0.	0.9
time (sec)	N/A	0.613	0.632	0.016	0.	0.255	0.	0.	81.988

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	292	682	0	509	0	0	282
normalized size	1	1.	0.91	2.13	0.	1.59	0.	0.	0.88
time (sec)	N/A	0.545	0.377	0.013	0.	0.268	0.	0.	64.407

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	170	356	0	266	0	0	219
normalized size	1	1.	0.67	1.4	0.	1.04	0.	0.	0.86
time (sec)	N/A	0.441	0.221	0.012	0.	0.266	0.	0.	44.845

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	91	150	0	112	0	0	105
normalized size	1	1.	0.73	1.2	0.	0.9	0.	0.	0.84
time (sec)	N/A	0.221	0.111	0.007	0.	0.273	0.	0.	19.811

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	42	0	47	0	0	26
normalized size	1	1.	1.	1.14	0.	1.27	0.	0.	0.7
time (sec)	N/A	0.052	0.012	0.006	0.	0.254	0.	0.	5.853

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	56	79	0	96	0	0	44
normalized size	1	1.	0.9	1.27	0.	1.55	0.	0.	0.71
time (sec)	N/A	0.311	0.05	0.016	0.	0.255	0.	0.	25.195

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	105	97	0	208	0	0	0
normalized size	1	1.	0.98	0.91	0.	1.94	0.	0.	0.
time (sec)	N/A	0.855	0.134	0.013	0.	0.256	0.	0.	0.

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	0	240	0	698	0	0	0
normalized size	1	1.	0.	1.	0.	2.91	0.	0.	0.
time (sec)	N/A	1.714	0.337	0.013	0.	0.257	0.	0.	0.

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	243	560	0	450	0	0	298
normalized size	1	1.	0.75	1.74	0.	1.4	0.	0.	0.93
time (sec)	N/A	0.602	0.356	0.023	0.	0.284	0.	0.	66.527

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	176	313	0	292	0	0	197
normalized size	1	1.	0.82	1.46	0.	1.36	0.	0.	0.92
time (sec)	N/A	0.398	0.223	0.015	0.	0.256	0.	0.	43.965

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	85	140	0	182	0	0	99
normalized size	1	1.	0.77	1.26	0.	1.64	0.	0.	0.89
time (sec)	N/A	0.216	0.128	0.01	0.	0.251	0.	0.	23.266

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	48	0	104	0	0	39
normalized size	1	1.	1.	0.96	0.	2.08	0.	0.	0.78
time (sec)	N/A	0.063	0.017	0.007	0.	0.257	0.	0.	7.349

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	0.034	0.072	0.	0.	0.	0.	0.

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.09	0.175	0.091	0.	0.	0.	0.	0.

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.084	0.103	0.119	0.	0.	0.	0.	0.

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	279	0	0	505	0	0	196
normalized size	1	1.	1.35	0.	0.	2.45	0.	0.	0.95
time (sec)	N/A	0.324	1.055	0.065	0.	0.271	0.	0.	42.635

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	184	0	0	370	0	0	143
normalized size	1	1.	1.22	0.	0.	2.45	0.	0.	0.95
time (sec)	N/A	0.235	1.443	0.053	0.	0.261	0.	0.	29.995

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	111	0	0	240	0	0	87
normalized size	1	1.	1.21	0.	0.	2.61	0.	0.	0.95
time (sec)	N/A	0.11	0.421	0.038	0.	0.249	0.	0.	11.46

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	61	0	0	136	0	0	36
normalized size	1	1.	1.52	0.	0.	3.4	0.	0.	0.9
time (sec)	N/A	0.015	0.005	0.023	0.	0.256	0.	0.	1.791

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.037	0.023	0.07	0.	0.	0.	0.	0.

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.09	0.275	0.084	0.	0.	0.	0.	0.

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	103	432	0	182	0	0	90
normalized size	1	1.	0.99	4.15	0.	1.75	0.	0.	0.87
time (sec)	N/A	1.602	0.224	0.055	0.	0.307	0.	0.	39.345

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	0	560	0	297	0	0	0
normalized size	1	1.	0.	3.52	0.	1.87	0.	0.	0.
time (sec)	N/A	3.633	0.576	0.05	0.	0.264	0.	0.	0.

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	366	366	0	1934	0	1019	0	0	0
normalized size	1	1.	0.	5.28	0.	2.78	0.	0.	0.
time (sec)	N/A	7.404	0.316	0.095	0.	0.337	0.	0.	0.

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	634	634	0	4471	0	3038	0	0	0
normalized size	1	1.	0.	7.05	0.	4.79	0.	0.	0.
time (sec)	N/A	14.46	0.607	0.162	0.	0.282	0.	0.	0.

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	122	214	344	159	0	185	0
normalized size	1	1.	0.56	0.99	1.59	0.73	0.	0.85	0.
time (sec)	N/A	0.364	0.239	0.103	0.881	0.249	0.	0.3	0.

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	104	165	285	130	0	146	0
normalized size	1	1.	0.63	1.01	1.74	0.79	0.	0.89	0.
time (sec)	N/A	0.167	0.152	0.039	0.908	0.274	0.	0.248	0.

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	81	80	182	109	0	108	0
normalized size	1	1.	1.	0.99	2.25	1.35	0.	1.33	0.
time (sec)	N/A	0.068	0.071	0.033	0.812	0.258	0.	0.26	0.

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	56	54	68	65	0	68	0
normalized size	1	1.	1.	0.96	1.21	1.16	0.	1.21	0.
time (sec)	N/A	0.031	0.012	0.029	0.808	0.263	0.	0.255	0.

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.039	0.132	0.016	0.	0.	0.	0.	0.

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	94	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.119	0.42	0.025	0.	0.	0.	0.	0.

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	91	194	244	112	0	140	0
normalized size	1	1.	0.5	1.07	1.35	0.62	0.	0.77	0.
time (sec)	N/A	0.288	0.306	0.01	0.814	0.271	0.	0.228	0.

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	79	111	204	92	0	108	0
normalized size	1	1.	0.59	0.83	1.52	0.69	0.	0.81	0.
time (sec)	N/A	0.14	0.172	0.009	0.861	0.254	0.	0.258	0.

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	68	53	132	76	0	78	0
normalized size	1	1.	1.03	0.8	2.	1.15	0.	1.18	0.
time (sec)	N/A	0.057	0.052	0.004	0.819	0.381	0.	0.257	0.

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	46	34	43	49	0	51	0
normalized size	1	1.	1.05	0.77	0.98	1.11	0.	1.16	0.
time (sec)	N/A	0.023	0.008	0.004	0.78	0.285	0.	0.248	0.

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	20	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.042	0.156	0.02	0.	0.	0.	0.	0.

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	82	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.112	0.26	0.024	0.	0.	0.	0.	0.

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	191	368	360	278	0	338	0
normalized size	1	1.	0.64	1.24	1.21	0.94	0.	1.14	0.
time (sec)	N/A	1.012	0.565	0.014	0.858	0.259	0.	0.252	0.

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	144	212	298	194	0	205	0
normalized size	1	1.	0.67	0.98	1.38	0.9	0.	0.95	0.
time (sec)	N/A	0.461	0.278	0.008	0.862	0.237	0.	0.246	0.

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	116	102	193	150	0	140	0
normalized size	1	1.	1.08	0.95	1.8	1.4	0.	1.31	0.
time (sec)	N/A	0.187	0.125	0.004	0.828	0.296	0.	0.235	0.

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	68	60	78	92	0	92	0
normalized size	1	1.	1.	0.88	1.15	1.35	0.	1.35	0.
time (sec)	N/A	0.05	0.022	0.004	0.758	0.289	0.	0.272	0.

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	28	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.2	0.683	0.023	0.	0.	0.	0.	0.

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	128	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.423	0.754	0.026	0.	0.	0.	0.	0.

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	266	266	169	553	899	284	0	541	0
normalized size	1	1.	0.64	2.08	3.38	1.07	0.	2.03	0.
time (sec)	N/A	0.599	0.328	0.059	1.069	0.266	0.	0.255	0.

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	123	314	547	177	0	340	0
normalized size	1	1.	0.65	1.66	2.89	0.94	0.	1.8	0.
time (sec)	N/A	0.235	0.195	0.044	0.929	0.307	0.	0.269	0.

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	96	136	254	122	0	184	0
normalized size	1	1.	1.07	1.51	2.82	1.36	0.	2.04	0.
time (sec)	N/A	0.097	0.097	0.034	0.855	0.255	0.	0.225	0.

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.048	0.271	0.04	0.	0.	0.	0.	0.

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	120	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.186	1.096	0.049	0.	0.	0.	0.	0.

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	207	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.376	1.006	0.073	0.	0.	0.	0.	0.

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	31	45	899	55	85	59	42
normalized size	1	1.	0.69	1.	19.98	1.22	1.89	1.31	0.93
time (sec)	N/A	0.089	0.041	0.01	0.914	0.244	0.178	0.241	8.303

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	86	97	547	109	0	119	0
normalized size	1	1.	1.1	1.24	7.01	1.4	0.	1.53	0.
time (sec)	N/A	0.099	0.068	0.039	0.87	0.268	0.	0.351	0.

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	18	23	23	24	23	14
normalized size	1	1.	1.	1.06	1.35	1.35	1.41	1.35	0.82
time (sec)	N/A	0.029	0.009	0.003	0.751	0.249	0.12	0.312	3.548

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	40	0	63	0	0	29
normalized size	1	1.	1.	1.03	0.	1.62	0.	0.	0.74
time (sec)	N/A	0.06	0.02	0.026	0.	0.265	0.	0.	5.741

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	96	81	0	123	0	0	0
normalized size	1	1.	1.14	0.96	0.	1.46	0.	0.	0.
time (sec)	N/A	0.095	0.065	0.075	0.	0.272	0.	0.	0.

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	79	68	0	143	0	0	58
normalized size	1	1.	1.14	0.99	0.	2.07	0.	0.	0.84
time (sec)	N/A	0.114	0.052	0.039	0.	0.265	0.	0.	10.862

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	29	44	883	54	83	54	39
normalized size	1	1.	0.67	1.02	20.53	1.26	1.93	1.26	0.91
time (sec)	N/A	0.071	0.027	0.006	0.886	0.266	0.178	0.23	8.129

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	84	84	535	101	0	103	0
normalized size	1	1.	1.12	1.12	7.13	1.35	0.	1.37	0.
time (sec)	N/A	0.101	0.038	0.043	0.895	0.266	0.	0.235	0.

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	17	22	22	22	22	12
normalized size	1	1.	1.	1.06	1.38	1.38	1.38	1.38	0.75
time (sec)	N/A	0.025	0.006	0.003	0.787	0.276	0.118	0.242	3.49

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	33	0	57	0	0	27
normalized size	1	1.	1.	0.89	0.	1.54	0.	0.	0.73
time (sec)	N/A	0.049	0.014	0.023	0.	0.252	0.	0.	5.425

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	94	71	0	115	0	0	0
normalized size	1	1.	1.16	0.88	0.	1.42	0.	0.	0.
time (sec)	N/A	0.085	0.027	0.043	0.	0.285	0.	0.	0.

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	77	58	0	135	0	0	54
normalized size	1	1.	1.17	0.88	0.	2.05	0.	0.	0.82
time (sec)	N/A	0.097	0.03	0.035	0.	0.262	0.	0.	10.282

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	133	142	0	165	0	0	126
normalized size	1	1.	0.92	0.98	0.	1.14	0.	0.	0.87
time (sec)	N/A	0.576	0.232	0.037	0.	0.265	0.	0.	54.354

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	93	112	0	108	0	0	94
normalized size	1	1.	0.84	1.01	0.	0.97	0.	0.	0.85
time (sec)	N/A	0.399	0.094	0.026	0.	0.268	0.	0.	43.15

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	94	102	0	116	0	0	104
normalized size	1	1.	0.8	0.86	0.	0.98	0.	0.	0.88
time (sec)	N/A	0.216	0.032	0.017	0.	0.346	0.	0.	29.965

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	83	323	0	97	0	0	83
normalized size	1	1.	0.83	3.23	0.	0.97	0.	0.	0.83
time (sec)	N/A	0.216	0.035	0.016	0.	0.274	0.	0.	25.997

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	120	660	0	155	0	0	114
normalized size	1	1.	0.91	5.	0.	1.17	0.	0.	0.86
time (sec)	N/A	0.415	0.118	0.021	0.	0.336	0.	0.	49.549

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	232	561	0	382	0	0	216
normalized size	1	1.	1.09	2.65	0.	1.8	0.	0.	1.02
time (sec)	N/A	1.038	1.363	0.039	0.	0.274	0.	0.	74.701

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	163	369	0	324	0	0	170
normalized size	1	1.	0.96	2.18	0.	1.92	0.	0.	1.01
time (sec)	N/A	0.706	0.643	0.027	0.	0.261	0.	0.	58.194

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	127	169	0	223	0	0	126
normalized size	1	1.	0.92	1.22	0.	1.62	0.	0.	0.91
time (sec)	N/A	0.314	0.139	0.018	0.	0.248	0.	0.	34.254

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	153	685	0	285	0	0	160
normalized size	1	1.	0.97	4.34	0.	1.8	0.	0.	1.01
time (sec)	N/A	0.371	0.208	0.019	0.	0.239	0.	0.	33.592

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	217	1730	0	358	0	0	190
normalized size	1	1.	1.17	9.3	0.	1.92	0.	0.	1.02
time (sec)	N/A	0.736	0.556	0.024	0.	0.255	0.	0.	64.547

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	268	3532	0	413	0	0	231
normalized size	1	1.	1.16	15.22	0.	1.78	0.	0.	1.
time (sec)	N/A	0.89	0.609	0.031	0.	0.266	0.	0.	70.803

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	28	35	41	34	31	0	0
normalized size	1	1.	0.93	1.17	1.37	1.13	1.03	0.	0.
time (sec)	N/A	0.064	0.03	0.023	0.855	0.251	0.169	0.	0.

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	28	35	41	34	31	42	0
normalized size	1	1.	0.93	1.17	1.37	1.13	1.03	1.4	0.
time (sec)	N/A	0.058	0.008	0.012	0.852	0.259	0.17	0.24	0.

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	29	37	45	36	34	0	0
normalized size	1	1.	0.91	1.16	1.41	1.12	1.06	0.	0.
time (sec)	N/A	0.064	0.033	0.022	0.842	0.255	0.187	0.	0.

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	29	37	45	36	34	46	0
normalized size	1	1.	0.91	1.16	1.41	1.12	1.06	1.44	0.
time (sec)	N/A	0.061	0.009	0.015	0.875	0.268	0.188	0.25	0.

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	39	54	80	53	92	0	58
normalized size	1	1.	0.67	0.93	1.38	0.91	1.59	0.	1.
time (sec)	N/A	0.104	0.047	0.023	0.843	0.247	0.684	0.	13.208

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	39	54	80	53	92	65	58
normalized size	1	1.	0.67	0.93	1.38	0.91	1.59	1.12	1.
time (sec)	N/A	0.091	0.01	0.016	0.756	0.266	0.267	0.232	13.138

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	40	55	78	55	92	0	58
normalized size	1	1.	0.69	0.95	1.34	0.95	1.59	0.	1.
time (sec)	N/A	0.096	0.046	0.016	0.873	0.255	0.7	0.	13.582

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	40	55	78	55	92	68	58
normalized size	1	1.	0.69	0.95	1.34	0.95	1.59	1.17	1.
time (sec)	N/A	0.094	0.011	0.014	0.756	0.254	0.273	0.229	13.554

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	53	0	1	24	0	27
normalized size	1	1.	1.	1.77	0.	0.03	0.8	0.	0.9
time (sec)	N/A	0.055	0.012	0.041	0.	0.278	0.201	0.	7.453

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	53	0	1	24	28	27
normalized size	1	1.	1.	1.77	0.	0.03	0.8	0.93	0.9
time (sec)	N/A	0.048	0.007	0.039	0.	0.257	0.203	0.228	7.982

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	49	0	1	24	0	27
normalized size	1	1.	1.	1.63	0.	0.03	0.8	0.	0.9
time (sec)	N/A	0.05	0.01	0.039	0.	0.271	0.22	0.	8.06

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	49	0	1	24	32	27
normalized size	1	1.	1.	1.63	0.	0.03	0.8	1.07	0.9
time (sec)	N/A	0.051	0.008	0.032	0.	0.276	0.223	0.247	8.545

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F(-2)	A	A	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	36	74	0	1	39	0	36
normalized size	1	1.	0.84	1.72	0.	0.02	0.91	0.	0.84
time (sec)	N/A	0.076	0.034	0.045	0.	0.265	0.25	0.	11.41

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F(-2)	A	A	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	36	74	0	1	44	51	36
normalized size	1	1.	0.84	1.72	0.	0.02	1.02	1.19	0.84
time (sec)	N/A	0.073	0.017	0.034	0.	0.261	0.279	0.244	11.7

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	36	70	0	1	39	0	36
normalized size	1	1.	0.84	1.63	0.	0.02	0.91	0.	0.84
time (sec)	N/A	0.077	0.033	0.042	0.	0.272	0.26	0.	12.504

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	36	70	0	1	44	53	36
normalized size	1	1.	0.84	1.63	0.	0.02	1.02	1.23	0.84
time (sec)	N/A	0.078	0.013	0.036	0.	0.299	0.297	0.223	12.814

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	36	0	0	1	85	0	29
normalized size	1	1.	1.16	0.	0.	0.03	2.74	0.	0.94
time (sec)	N/A	0.063	0.052	0.032	0.	0.276	1.153	0.	6.971

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	36	0	0	1	85	42	29
normalized size	1	1.	1.16	0.	0.	0.03	2.74	1.35	0.94
time (sec)	N/A	0.061	0.021	0.021	0.	0.265	1.158	0.247	7.409

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	34	0	0	1	87	0	29
normalized size	1	1.	1.06	0.	0.	0.03	2.72	0.	0.91
time (sec)	N/A	0.063	0.043	0.029	0.	0.291	1.172	0.	7.21

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	34	0	0	1	87	49	29
normalized size	1	1.	1.06	0.	0.	0.03	2.72	1.53	0.91
time (sec)	N/A	0.065	0.025	0.022	0.	0.301	1.182	0.24	7.617

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	35	40	32	41	0	0	19
normalized size	1	1.	1.46	1.67	1.33	1.71	0.	0.	0.79
time (sec)	N/A	0.076	0.048	0.043	0.851	0.275	0.	0.	5.846

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	35	40	32	41	0	39	19
normalized size	1	1.	1.46	1.67	1.33	1.71	0.	1.62	0.79
time (sec)	N/A	0.074	0.008	0.03	0.789	0.266	0.	0.22	6.146

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	38	44	34	43	0	0	19
normalized size	1	1.	1.52	1.76	1.36	1.72	0.	0.	0.76
time (sec)	N/A	0.078	0.048	0.033	0.85	0.277	0.	0.	6.212

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	38	44	34	43	0	45	19
normalized size	1	1.	1.52	1.76	1.36	1.72	0.	1.8	0.76
time (sec)	N/A	0.078	0.008	0.026	0.742	0.262	0.	0.259	6.44

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	56	29	92	36	56	0	39
normalized size	1	1.	1.27	0.66	2.09	0.82	1.27	0.	0.89
time (sec)	N/A	0.074	0.099	0.023	0.913	0.269	1.63	0.	9.339

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	56	29	51	36	58	42	39
normalized size	1	1.	1.27	0.66	1.16	0.82	1.32	0.95	0.89
time (sec)	N/A	0.077	0.021	0.016	0.813	0.259	1.637	0.234	9.346

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	57	29	96	38	58	0	39
normalized size	1	1.	1.24	0.63	2.09	0.83	1.26	0.	0.85
time (sec)	N/A	0.079	0.101	0.024	0.903	0.243	1.627	0.	10.061

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	57	29	54	38	60	45	39
normalized size	1	1.	1.24	0.63	1.17	0.83	1.3	0.98	0.85
time (sec)	N/A	0.083	0.02	0.018	0.772	0.255	1.628	0.244	10.111

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	114	0	0	1	0	0	78
normalized size	1	1.	1.23	0.	0.	0.01	0.	0.	0.84
time (sec)	N/A	0.152	0.134	0.036	0.	0.263	0.	0.	12.538

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	114	0	0	1	0	127	78
normalized size	1	1.	1.23	0.	0.	0.01	0.	1.37	0.84
time (sec)	N/A	0.15	0.032	0.023	0.	0.251	0.	0.298	12.527

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	118	0	0	1	0	0	78
normalized size	1	1.	1.23	0.	0.	0.01	0.	0.	0.81
time (sec)	N/A	0.155	0.119	0.032	0.	0.267	0.	0.	13.454

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	118	0	0	1	0	135	78
normalized size	1	1.	1.23	0.	0.	0.01	0.	1.41	0.81
time (sec)	N/A	0.161	0.051	0.022	0.	0.268	0.	0.298	13.371

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	18	20	34	14	20	17
normalized size	1	1.	1.	1.06	1.18	2.	0.82	1.18	1.
time (sec)	N/A	0.029	0.017	0.013	0.781	0.247	0.065	0.238	7.384

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	21	24	24	17	24	0
normalized size	1	1.	1.	0.88	1.	1.	0.71	1.	0.
time (sec)	N/A	0.041	0.009	0.012	0.812	0.269	0.106	0.274	0.

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	44	35	58	88	22	62	65
normalized size	1	1.	0.79	0.62	1.04	1.57	0.39	1.11	1.16
time (sec)	N/A	0.068	0.072	0.009	0.85	0.274	0.129	0.256	8.971

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	37	46	57	24	46	42
normalized size	1	1.	1.	0.84	1.05	1.3	0.55	1.05	0.95
time (sec)	N/A	0.071	0.052	0.009	0.856	0.293	0.128	0.251	10.48

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	66	66	0	1	63	85	61
normalized size	1	1.	0.99	0.99	0.	0.01	0.94	1.27	0.91
time (sec)	N/A	0.116	0.192	0.014	0.	0.289	0.596	0.354	21.992

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	38	38	50	66	0	0	0
normalized size	1	1.	0.86	0.86	1.14	1.5	0.	0.	0.
time (sec)	N/A	0.191	0.071	0.016	0.79	0.264	0.	0.	0.

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	54	41	51	51	0	0	39
normalized size	1	1.	1.	0.76	0.94	0.94	0.	0.	0.72
time (sec)	N/A	0.182	0.017	0.01	0.846	0.25	0.	0.	17.346

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	119	183	0	162	0	0	129
normalized size	1	1.	0.66	1.02	0.	0.9	0.	0.	0.72
time (sec)	N/A	0.297	0.287	0.018	0.	0.257	0.	0.	18.737

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	146	235	0	208	0	0	122
normalized size	1	1.	0.72	1.15	0.	1.02	0.	0.	0.6
time (sec)	N/A	0.311	0.167	0.016	0.	0.267	0.	0.	26.759

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	205	378	0	456	0	0	199
normalized size	1	1.	0.74	1.37	0.	1.65	0.	0.	0.72
time (sec)	N/A	0.708	0.323	0.022	0.	0.26	0.	0.	34.043

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	57	65	84	103	0	0	0
normalized size	1	1.	0.79	0.9	1.17	1.43	0.	0.	0.
time (sec)	N/A	0.342	0.138	0.044	0.845	0.254	0.	0.	0.

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	77	62	80	80	0	0	65
normalized size	1	1.	1.	0.81	1.04	1.04	0.	0.	0.84
time (sec)	N/A	0.31	0.019	0.01	0.847	0.258	0.	0.	25.826

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	252	0	0	238	0	0	199
normalized size	1	1.	0.97	0.	0.	0.92	0.	0.	0.77
time (sec)	N/A	0.456	0.2	0.036	0.	0.304	0.	0.	33.79

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	304	0	0	300	0	0	189
normalized size	1	1.	1.04	0.	0.	1.02	0.	0.	0.65
time (sec)	N/A	0.47	0.136	0.036	0.	0.3	0.	0.	45.713

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	407	0	0	632	0	0	304
normalized size	1	1.	1.04	0.	0.	1.62	0.	0.	0.78
time (sec)	N/A	0.992	0.255	0.04	0.	0.293	0.	0.	66.489

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	68	74	80	34	0	0
normalized size	1	1.	1.	1.7	1.85	2.	0.85	0.	0.
time (sec)	N/A	0.048	0.075	0.024	0.753	0.281	0.121	0.	0.

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	93	547	0	1	104	0	138
normalized size	1	1.	0.99	5.82	0.	0.01	1.11	0.	1.47
time (sec)	N/A	0.162	0.218	0.322	0.	0.312	0.649	0.	31.74

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	93	546	0	1	112	0	138
normalized size	1	1.	0.99	5.81	0.	0.01	1.19	0.	1.47
time (sec)	N/A	0.151	0.215	0.108	0.	0.365	0.608	0.	31.588

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	88	134	154	193	0	0	0
normalized size	1	1.	0.92	1.4	1.6	2.01	0.	0.	0.
time (sec)	N/A	0.37	0.25	0.044	0.803	0.268	0.	0.	0.

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	F	C	F(-2)	A	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	338	338	0	836	0	752	0	0	246
normalized size	1	1.	0.	2.47	0.	2.22	0.	0.	0.73
time (sec)	N/A	1.039	179.997	0.037	0.	0.287	0.	0.	54.595

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	123	221	211	284	0	0	0
normalized size	1	1.	0.85	1.52	1.46	1.96	0.	0.	0.
time (sec)	N/A	0.647	0.348	0.039	0.789	0.307	0.	0.	0.

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	484	484	0	0	0	1018	0	0	379
normalized size	1	1.	0.	0.	0.	2.1	0.	0.	0.78
time (sec)	N/A	1.403	19.388	0.059	0.	0.302	0.	0.	98.92

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	102	993	0	1	148	0	148
normalized size	1	1.	0.99	9.64	0.	0.01	1.44	0.	1.44
time (sec)	N/A	0.285	0.283	0.215	0.	0.42	1.309	0.	57.195

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	102	993	0	1	148	0	148
normalized size	1	1.	0.99	9.64	0.	0.01	1.44	0.	1.44
time (sec)	N/A	0.262	0.034	0.	0.	0.394	1.335	0.	57.228

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	9	11	11	7	11	20
normalized size	1	1.	1.	1.	1.22	1.22	0.78	1.22	2.22
time (sec)	N/A	0.018	0.005	0.007	0.816	0.23	0.051	0.235	4.218

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	24	31	14	38	0
normalized size	1	1.	1.	0.95	1.2	1.55	0.7	1.9	0.
time (sec)	N/A	0.204	0.018	0.012	0.76	0.245	0.076	0.246	0.

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	33	32	41	51	0	0	0
normalized size	1	1.	0.97	0.94	1.21	1.5	0.	0.	0.
time (sec)	N/A	0.378	0.057	0.031	0.815	0.258	0.	0.	0.

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	25	30	27	19	0	53
normalized size	1	1.	1.	1.25	1.5	1.35	0.95	0.	2.65
time (sec)	N/A	0.034	0.018	0.021	0.783	0.263	0.099	0.	7.264

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	44	64	77	82	42	0	0
normalized size	1	1.	0.88	1.28	1.54	1.64	0.84	0.	0.
time (sec)	N/A	0.437	0.054	0.023	0.795	0.255	0.153	0.	0.

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	63	129	109	154	0	0	0
normalized size	1	1.	0.84	1.72	1.45	2.05	0.	0.	0.
time (sec)	N/A	0.755	0.146	0.043	0.888	0.254	0.	0.	0.

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	19	18	10	18	24
normalized size	1	1.	1.	1.08	1.46	1.38	0.77	1.38	1.85
time (sec)	N/A	0.021	0.009	0.006	0.815	0.245	0.075	0.264	4.349

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	21	18	26	23	17	24	17
normalized size	1	1.	0.91	0.78	1.13	1.	0.74	1.04	0.74
time (sec)	N/A	0.032	0.014	0.009	0.785	0.251	0.116	0.252	5.723

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	40	36	0	1	36	47	36
normalized size	1	1.	1.11	1.	0.	0.03	1.	1.31	1.
time (sec)	N/A	0.109	0.035	0.007	0.	0.254	0.317	0.23	9.868

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	123	180	0	369	0	0	144
normalized size	1	1.	0.77	1.13	0.	2.32	0.	0.	0.91
time (sec)	N/A	0.485	0.144	0.017	0.	0.261	0.	0.	49.208

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	185	0	0	500	0	0	230
normalized size	1	1.	0.76	0.	0.	2.05	0.	0.	0.94
time (sec)	N/A	0.797	0.076	0.026	0.	0.267	0.	0.	82.792

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	51	135	0	1	66	0	60
normalized size	1	1.	1.09	2.87	0.	0.02	1.4	0.	1.28
time (sec)	N/A	0.123	0.073	0.044	0.	0.279	0.487	0.	14.255

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	0	426	0	558	0	0	185
normalized size	1	1.	0.	2.1	0.	2.75	0.	0.	0.91
time (sec)	N/A	0.634	10.368	0.048	0.	0.305	0.	0.	71.122

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	0	0	0	741	0	0	294
normalized size	1	1.	0.	0.	0.	2.39	0.	0.	0.95
time (sec)	N/A	1.077	2.082	0.053	0.	0.277	0.	0.	112.9

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	53	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.227	0.254	0.087	0.	0.	0.	0.	0.

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F(-1)	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.413	1.126	0.068	0.	0.	0.	0.	0.

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.369	0.632	0.068	0.	0.	0.	0.	0.

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.202	0.366	0.067	0.	0.	0.	0.	0.

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	26	37	49	35	128	0	31
normalized size	1	1.	0.72	1.03	1.36	0.97	3.56	0.	0.86
time (sec)	N/A	0.029	0.015	0.01	0.808	0.265	0.467	0.	5.351

Problem 548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	53	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.239	0.174	0.069	0.	0.	0.	0.	0.

Problem 549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	53	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.227	1.521	0.069	0.	0.	0.	0.	0.

Problem 550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	50	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.355	0.223	0.043	0.	0.	0.	0.	0.

Problem 551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.515	0.876	0.024	0.	0.	0.	0.	0.

Problem 552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.483	0.599	0.026	0.	0.	0.	0.	0.

Problem 553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F(-1)
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.286	0.275	0.023	0.	0.	0.	0.	0.

Problem 554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	32	42	34	20	51	8
normalized size	1	1.	1.	2.29	3.	2.43	1.43	3.64	0.57
time (sec)	N/A	0.017	0.004	0.007	0.785	0.249	0.15	0.229	6.519

Problem 555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	50	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.357	0.195	0.024	0.	0.	0.	0.	0.

Problem 556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	F(-2)	F(-2)	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	50	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.34	1.646	0.024	0.	0.	0.	0.	0.

Problem 557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	77	0	0	34	0	0	66
normalized size	1	1.	1.	0.	0.	0.44	0.	0.	0.86
time (sec)	N/A	0.394	0.156	0.075	0.	0.462	0.	0.	18.833

Problem 558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	34	0	0	26
normalized size	1	1.	1.	0.	0.	1.17	0.	0.	0.9
time (sec)	N/A	0.174	0.1	0.036	0.	0.432	0.	0.	11.978

Problem 559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	34	0	0	26
normalized size	1	1.	1.	0.	0.	1.17	0.	0.	0.9
time (sec)	N/A	0.175	0.096	0.019	0.	0.467	0.	0.	12.065

Problem 560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	0	0	32	0	0	24
normalized size	1	1.	1.	0.	0.	1.14	0.	0.	0.86
time (sec)	N/A	0.157	0.085	0.019	0.	0.369	0.	0.	11.308

Problem 561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	0	0	0	26
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.9
time (sec)	N/A	0.173	0.095	0.019	0.	0.	0.	0.	12.101

Problem 562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	0	0	0	27
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.93
time (sec)	N/A	0.174	0.095	0.017	0.	0.	0.	0.	11.864

Problem 563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	35	69	90	96	279	1	61
normalized size	1	1.	0.71	1.41	1.84	1.96	5.69	0.02	1.24
time (sec)	N/A	0.098	0.023	0.012	0.865	0.247	3.574	0.263	13.239

Problem 564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	26	25	50	46	97	1	36
normalized size	1	1.	0.84	0.81	1.61	1.48	3.13	0.03	1.16
time (sec)	N/A	0.047	0.01	0.009	0.768	0.249	1.804	0.238	7.276

Problem 565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	15	0	19	24	327	15
normalized size	1	1.	1.	1.07	0.	1.36	1.71	23.36	1.07
time (sec)	N/A	0.021	0.004	0.003	0.	0.244	0.954	0.243	3.521

Problem 566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	10	56	11	14	0	0	8
normalized size	1	1.	1.25	7.	1.38	1.75	0.	0.	1.
time (sec)	N/A	0.062	0.004	0.046	0.833	0.244	0.	0.	8.759

Problem 567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	0	160	22	46	0	0	27
normalized size	1	1.	0.	6.15	0.85	1.77	0.	0.	1.04
time (sec)	N/A	0.095	0.045	0.046	0.818	0.247	0.	0.	10.94

Problem 568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	0	225	26	82	0	0	56
normalized size	1	1.	0.	4.41	0.51	1.61	0.	0.	1.1
time (sec)	N/A	0.13	0.043	0.056	0.799	0.261	0.	0.	14.05

Problem 569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	20	0	26	41	429	22
normalized size	1	1.	1.	1.05	0.	1.37	2.16	22.58	1.16
time (sec)	N/A	0.063	0.008	0.007	0.	0.248	3.827	0.255	9.477

Problem 570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	0	24	17	312	15
normalized size	1	1.	1.	1.06	0.	1.33	0.94	17.33	0.83
time (sec)	N/A	0.033	0.006	0.007	0.	0.249	0.968	0.241	3.714

Problem 571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	43	73	97	101	333	1	61
normalized size	1	1.	0.7	1.2	1.59	1.66	5.46	0.02	1.
time (sec)	N/A	0.105	0.025	0.01	0.778	0.244	2.378	0.261	14.312

Problem 572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F(-2)	A	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	770	770	2441	0	0	2531	0	0	0
normalized size	1	1.	3.17	0.	0.	3.29	0.	0.	0.
time (sec)	N/A	2.458	6.473	0.17	0.	0.38	0.	0.	0.

Problem 573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F(-2)	A	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	599	599	1412	0	0	1650	0	0	0
normalized size	1	1.	2.36	0.	0.	2.75	0.	0.	0.
time (sec)	N/A	1.813	3.889	0.112	0.	0.303	0.	0.	0.

Problem 574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F(-2)	A	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	428	428	574	1261	0	936	0	0	314
normalized size	1	1.	1.34	2.95	0.	2.19	0.	0.	0.73
time (sec)	N/A	0.98	4.187	0.055	0.	0.284	0.	0.	84.719

Problem 575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	94	183	0	1	116	161	138
normalized size	1	1.	0.99	1.93	0.	0.01	1.22	1.69	1.45
time (sec)	N/A	0.288	0.267	0.005	0.	0.282	1.146	0.237	57.289

Problem 576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	84	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.586	0.533	0.115	0.	0.	0.	0.	0.

Problem 577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	F(-1)	A	F(-1)
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	84	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.378	5.347	0.142	0.	0.	0.	0.	0.

Problem 578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	176	285	0	393	0	0	121
normalized size	1	1.	1.17	1.9	0.	2.62	0.	0.	0.81
time (sec)	N/A	0.986	0.391	0.054	0.	0.325	0.	0.	68.313

Problem 579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.096	0.415	0.065	0.	0.	0.	0.	0.

Problem 580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.067	0.24	0.058	0.	0.	0.	0.	0.

Problem 581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.04	0.033	0.098	0.	0.	0.	0.	0.

Problem 582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	50	0	0	0	0	0	0
normalized size	1	1.	0.88	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.11	0.089	0.068	0.	0.	0.	0.	0.

Problem 583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.087	0.245	0.062	0.	0.	0.	0.	0.

Problem 584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.087	0.241	0.06	0.	0.	0.	0.	0.

Problem 585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	0	0	0	0	0	0	0
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.107	0.286	0.108	0.	0.	0.	0.	0.

Problem 586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	89	0	115	130	0	0	0
normalized size	1	1.	1.	0.	1.29	1.46	0.	0.	0.
time (sec)	N/A	0.152	0.124	0.303	0.911	0.42	0.	0.	0.

Problem 587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	0	112	123	199	0	0
normalized size	1	1.	1.	0.	1.35	1.48	2.4	0.	0.
time (sec)	N/A	0.122	0.107	0.155	0.844	0.247	83.007	0.	0.

Problem 588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	87	0	115	130	190	113	0
normalized size	1	1.	1.	0.	1.32	1.49	2.18	1.3	0.
time (sec)	N/A	0.108	0.085	0.059	0.858	0.265	10.011	0.241	0.

Problem 589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	84	59	0	0	0
normalized size	1	1.	1.	0.	1.87	1.31	0.	0.	0.
time (sec)	N/A	0.072	0.009	180.	0.849	0.264	0.	0.	0.

Problem 590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	87	0	115	130	192	0	0
normalized size	1	1.	1.	0.	1.32	1.49	2.21	0.	0.
time (sec)	N/A	0.1	0.111	0.184	0.89	0.252	88.459	0.	0.

Problem 591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	83	0	112	123	0	0	0
normalized size	1	1.	0.99	0.	1.33	1.46	0.	0.	0.
time (sec)	N/A	0.1	0.113	0.221	0.897	0.277	0.	0.	0.

Problem 592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	110	0	122	162	0	0	0
normalized size	1	1.	1.05	0.	1.16	1.54	0.	0.	0.
time (sec)	N/A	0.254	0.157	112.617	0.844	0.255	0.	0.	0.

Problem 593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	96	0	155	147	0	0	0
normalized size	1	1.	0.97	0.	1.57	1.48	0.	0.	0.
time (sec)	N/A	0.312	0.268	0.272	0.855	0.278	0.	0.	0.

Problem 594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	90	0	153	142	0	0	0
normalized size	1	1.	1.	0.	1.7	1.58	0.	0.	0.
time (sec)	N/A	0.268	0.237	0.153	0.857	0.253	0.	0.	0.

Problem 595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	93	0	155	147	0	130	0
normalized size	1	1.	0.98	0.	1.63	1.55	0.	1.37	0.
time (sec)	N/A	0.22	0.147	0.066	0.89	0.268	0.	0.381	0.

Problem 596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	39	95	139	70	0	0	0
normalized size	1	1.	0.87	2.11	3.09	1.56	0.	0.	0.
time (sec)	N/A	0.177	0.01	0.46	0.938	0.271	0.	0.	0.

Problem 597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	93	0	155	147	0	0	0
normalized size	1	1.	0.98	0.	1.63	1.55	0.	0.	0.
time (sec)	N/A	0.284	0.212	0.191	0.92	0.268	0.	0.	0.

Problem 598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	89	0	153	140	0	0	0
normalized size	1	1.	0.97	0.	1.66	1.52	0.	0.	0.
time (sec)	N/A	0.292	0.236	0.227	0.895	0.261	0.	0.	0.

Problem 599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	111	0	162	193	0	0	0
normalized size	1	1.	0.97	0.	1.41	1.68	0.	0.	0.
time (sec)	N/A	0.516	0.292	180.	0.88	0.256	0.	0.	0.

Problem 600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	18	23	23	24	23	14
normalized size	1	1.	1.	1.06	1.35	1.35	1.41	1.35	0.82
time (sec)	N/A	0.08	0.013	0.006	0.765	0.274	0.125	0.463	8.638

Problem 601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	19	21	27	27	32	27	17
normalized size	1	1.	0.95	1.05	1.35	1.35	1.6	1.35	0.85
time (sec)	N/A	0.255	0.018	0.004	0.762	0.257	1.246	0.234	36.251

Problem 602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	0	0	0	31	0	0	39
normalized size	1	1.	0.	0.	0.	0.63	0.	0.	0.8
time (sec)	N/A	0.305	1.377	0.29	0.	0.266	0.	0.	76.612

Problem 603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	49	145	3214	147	160	360	85
normalized size	1	1.	0.54	1.61	35.71	1.63	1.78	4.	0.94
time (sec)	N/A	0.289	0.029	0.008	1.24	0.233	0.321	0.259	80.532

Problem 604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	36	64	1651	74	68	161	60
normalized size	1	1.	0.56	1.	25.8	1.16	1.06	2.52	0.94
time (sec)	N/A	0.245	0.017	0.007	1.079	0.265	0.22	0.291	78.549

Problem 605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	23	24	676	31	22	59	32
normalized size	1	1.	0.61	0.63	17.79	0.82	0.58	1.55	0.84
time (sec)	N/A	0.148	0.021	0.005	0.928	0.245	0.146	0.295	32.276

Problem 606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	12	15	15	10	15	10
normalized size	1	1.	1.	1.	1.25	1.25	0.83	1.25	0.83
time (sec)	N/A	0.028	0.007	0.003	0.787	0.253	0.094	0.242	3.414

Problem 607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	10	19	0	15	0	0	10
normalized size	1	1.	0.91	1.73	0.	1.36	0.	0.	0.91
time (sec)	N/A	0.266	0.009	0.008	0.	0.233	0.	0.	79.42

Problem 608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	35	45	0	66	0	0	32
normalized size	1	1.	0.92	1.18	0.	1.74	0.	0.	0.84
time (sec)	N/A	0.293	0.031	0.006	0.	0.247	0.	0.	82.282

Problem 609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	50	70	0	150	0	0	65
normalized size	1	1.	0.69	0.97	0.	2.08	0.	0.	0.9
time (sec)	N/A	0.372	0.052	0.006	0.	0.251	0.	0.	86.162

Problem 610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	91	119	0	0	0	0	134
normalized size	1	1.	0.64	0.84	0.	0.	0.	0.	0.94
time (sec)	N/A	1.014	0.178	0.011	0.	0.	0.	0.	86.122

Problem 611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	78	94	0	0	0	0	105
normalized size	1	1.	0.7	0.84	0.	0.	0.	0.	0.94
time (sec)	N/A	0.723	0.166	0.01	0.	0.	0.	0.	82.096

Problem 612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	67	69	0	0	0	0	76
normalized size	1	1.	0.82	0.84	0.	0.	0.	0.	0.93
time (sec)	N/A	0.556	0.122	0.01	0.	0.	0.	0.	78.848

Problem 613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	49	44	0	0	0	63	46
normalized size	1	1.	0.94	0.85	0.	0.	0.	1.21	0.88
time (sec)	N/A	0.346	0.039	0.01	0.	0.	0.	0.244	76.886

Problem 614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	20	18	0	0	0	0	19
normalized size	1	1.	0.95	0.86	0.	0.	0.	0.	0.9
time (sec)	N/A	0.401	0.026	0.016	0.	0.	0.	0.	77.256

Problem 615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	48	45	0	0	0	0	48
normalized size	1	1.	0.94	0.88	0.	0.	0.	0.	0.94
time (sec)	N/A	0.577	0.08	0.009	0.	0.	0.	0.	82.47

Problem 616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	67	70	0	0	0	0	80
normalized size	1	1.	0.79	0.82	0.	0.	0.	0.	0.94
time (sec)	N/A	0.775	0.158	0.01	0.	0.	0.	0.	88.91

Problem 617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	106	95	0	0	0	0	109
normalized size	1	1.	0.92	0.83	0.	0.	0.	0.	0.95
time (sec)	N/A	0.878	0.251	0.01	0.	0.	0.	0.	99.329

Problem 618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	90	120	0	0	0	0	138
normalized size	1	1.	0.62	0.83	0.	0.	0.	0.	0.95
time (sec)	N/A	0.934	0.342	0.01	0.	0.	0.	0.	116.711

Problem 619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	42	37	19	24	7	19	7
normalized size	1	1.	5.25	4.62	2.38	3.	0.88	2.38	0.88
time (sec)	N/A	0.044	0.029	0.053	0.913	0.244	0.655	0.246	6.427

Problem 620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	8	9	9	15	9	7
normalized size	1	1.	1.	0.67	0.75	0.75	1.25	0.75	0.58
time (sec)	N/A	0.031	0.006	0.004	0.855	0.256	0.101	0.228	5.649

Problem 621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	23	4	20	20	15	22	3
normalized size	1	1.	5.75	1.	5.	5.	3.75	5.5	0.75
time (sec)	N/A	0.032	0.006	0.001	0.746	0.241	0.09	0.222	7.233

Problem 622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	36	14	35	49	15	41	19
normalized size	1	1.	1.8	0.7	1.75	2.45	0.75	2.05	0.95
time (sec)	N/A	0.039	0.023	0.006	0.913	0.244	0.11	0.225	7.193

Problem 623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	36	26	34	46	42	34	32
normalized size	1	1.	1.	0.72	0.94	1.28	1.17	0.94	0.89
time (sec)	N/A	0.049	0.027	0.01	0.872	0.273	1.743	0.238	6.129

Problem 624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	14	12	15	15	10	15	15
normalized size	1	1.	0.64	0.55	0.68	0.68	0.45	0.68	0.68
time (sec)	N/A	0.032	0.003	0.004	0.785	0.234	0.059	0.223	3.782

Problem 625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	26	21	27	124	24	27	20
normalized size	1	1.	0.9	0.72	0.93	4.28	0.83	0.93	0.69
time (sec)	N/A	0.045	0.021	0.006	0.855	0.247	1.541	0.232	6.051

Problem 626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	11	16	28	0	28	22
normalized size	1	1.	1.	0.79	1.14	2.	0.	2.	1.57
time (sec)	N/A	0.06	0.018	0.015	0.871	0.255	0.	0.231	12.085

Problem 627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	23	16	20	20	15	22	8
normalized size	1	1.	1.92	1.33	1.67	1.67	1.25	1.83	0.67
time (sec)	N/A	0.031	0.005	0.009	0.777	0.25	0.091	0.235	5.619

Problem 628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	11	14	14	8	14	8
normalized size	1	1.	1.	0.85	1.08	1.08	0.62	1.08	0.62
time (sec)	N/A	0.017	0.003	0.003	0.815	0.243	0.061	0.233	2.174

Problem 629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	16	0	27	10	20	10
normalized size	1	1.	1.	1.	0.	1.69	0.62	1.25	0.62
time (sec)	N/A	0.011	0.008	0.003	0.	0.258	0.058	0.22	1.219

Problem 630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	18	18	18	14	18	22
normalized size	1	1.	1.	1.	1.	1.	0.78	1.	1.22
time (sec)	N/A	0.049	0.005	0.008	0.804	0.287	0.063	0.23	10.503

Problem 631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	4	4	4	27	3	4	3
normalized size	1	1.	1.	1.	1.	6.75	0.75	1.	0.75
time (sec)	N/A	0.036	0.012	0.01	0.886	0.389	0.532	0.238	5.802

Problem 632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	8	9	9	17	9	7
normalized size	1	1.	1.	0.8	0.9	0.9	1.7	0.9	0.7
time (sec)	N/A	0.034	0.006	0.004	0.857	0.261	0.1	0.224	5.889

Problem 633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	22	20	23	28	17	24	0
normalized size	1	1.	0.81	0.74	0.85	1.04	0.63	0.89	0.
time (sec)	N/A	0.036	0.014	0.013	0.778	0.247	0.089	0.235	0.

Problem 634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	11	14	14	10	14	20
normalized size	1	1.	1.	0.92	1.17	1.17	0.83	1.17	1.67
time (sec)	N/A	0.058	0.007	0.004	0.829	0.26	0.073	0.231	20.907

Problem 635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	6	6	23	6	20	20	15	22	5
normalized size	1	1.	3.83	1.	3.33	3.33	2.5	3.67	0.83
time (sec)	N/A	0.03	0.004	0.005	0.777	0.249	0.088	0.446	5.57

Problem 636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	4	4	4	4	15	4	3
normalized size	1	1.	1.	1.	1.	1.	3.75	1.	0.75
time (sec)	N/A	0.029	0.005	0.	0.842	0.242	0.097	0.246	5.534

Problem 637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	14	14	17	14	15	8	16	15
normalized size	1	1.17	1.17	1.42	1.17	1.25	0.67	1.33	1.25
time (sec)	N/A	0.082	0.005	0.014	0.781	0.239	0.078	0.238	44.366

Problem 638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	12	12	14	11	15	8	15	15
normalized size	1	1.2	1.2	1.4	1.1	1.5	0.8	1.5	1.5
time (sec)	N/A	0.073	0.005	0.011	0.758	0.45	0.076	0.229	42.022

Problem 639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	30	19	18	10	19	0
normalized size	1	1.	1.	1.67	1.06	1.	0.56	1.06	0.
time (sec)	N/A	0.086	0.005	0.019	0.772	0.275	0.083	0.235	0.

Problem 640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	4	4	4	22	3	22	3
normalized size	1	1.	1.	1.	1.	5.5	0.75	5.5	0.75
time (sec)	N/A	0.032	0.012	0.013	0.862	0.251	0.509	0.228	5.193

Problem 641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	9	11	11	8	11	8
normalized size	1	1.	1.	0.82	1.	1.	0.73	1.	0.73
time (sec)	N/A	0.038	0.005	0.004	0.821	0.241	0.224	0.219	3.535

Problem 642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	14	18	18	0	18	14
normalized size	1	1.	1.	0.78	1.	1.	0.	1.	0.78
time (sec)	N/A	0.095	0.014	0.016	0.882	0.25	0.	0.323	6.83

Problem 643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	21	27	126	0	39	24
normalized size	1	1.	1.	0.68	0.87	4.06	0.	1.26	0.77
time (sec)	N/A	0.038	0.019	0.009	0.835	0.238	0.	0.239	5.418

Problem 644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	24	19	24	122	0	39	20
normalized size	1	1.	0.89	0.7	0.89	4.52	0.	1.44	0.74
time (sec)	N/A	0.038	0.015	0.004	0.847	0.254	0.	0.234	5.426

Problem 645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	8	9	9	17	9	7
normalized size	1	1.	1.	0.8	0.9	0.9	1.7	0.9	0.7
time (sec)	N/A	0.187	0.008	0.005	0.882	0.241	0.121	0.223	16.83

Problem 646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	18	17	15	15	24	18	24
normalized size	1	1.	0.64	0.61	0.54	0.54	0.86	0.64	0.86
time (sec)	N/A	0.063	0.005	0.001	0.776	0.245	4.785	0.238	6.508

Problem 647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	22	22	10	22	14
normalized size	1	1.	1.	0.81	1.38	1.38	0.62	1.38	0.88
time (sec)	N/A	0.039	0.013	0.013	0.807	0.235	0.513	0.228	5.493

Problem 648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	23	16	20	20	15	22	7
normalized size	1	1.	1.92	1.33	1.67	1.67	1.25	1.83	0.58
time (sec)	N/A	0.034	0.006	0.01	0.818	0.231	0.095	0.238	7.295

Problem 649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	8	9	9	17	9	7
normalized size	1	1.	1.	0.8	0.9	0.9	1.7	0.9	0.7
time (sec)	N/A	0.033	0.006	0.006	0.869	0.247	0.102	0.236	5.895

Problem 650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	0	12	24	8	24	8
normalized size	1	1.	1.	0.	0.86	1.71	0.57	1.71	0.57
time (sec)	N/A	0.038	0.014	0.042	0.891	0.256	0.61	0.225	5.765

Problem 651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	28	53	39	39	32	34	32
normalized size	1	1.	0.8	1.51	1.11	1.11	0.91	0.97	0.91
time (sec)	N/A	0.292	0.029	0.037	0.815	0.272	2.546	0.248	12.5

Problem 652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	9	11	11	7	11	7
normalized size	1	1.	1.	0.82	1.	1.	0.64	1.	0.64
time (sec)	N/A	0.015	0.003	0.001	0.795	0.348	0.056	0.296	2.085

Problem 653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	9	11	11	7	11	7
normalized size	1	1.	1.	0.82	1.	1.	0.64	1.	0.64
time (sec)	N/A	0.024	0.003	0.003	0.832	0.263	0.061	0.227	2.851

Problem 654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	7	8	8	7	8	7
normalized size	1	1.	1.	0.78	0.89	0.89	0.78	0.89	0.78
time (sec)	N/A	0.017	0.003	0.004	0.77	0.241	0.214	0.223	2.762

Problem 655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	7	8	8	7	8	7
normalized size	1	1.	1.	0.78	0.89	0.89	0.78	0.89	0.78
time (sec)	N/A	0.018	0.003	0.001	0.768	0.25	0.502	0.298	2.769

Problem 656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	34	32	80	42	31	42	63
normalized size	1	1.	0.5	0.47	1.18	0.62	0.46	0.62	0.93
time (sec)	N/A	0.164	0.008	0.009	0.785	0.223	0.084	0.26	13.051

Problem 657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	26	22	26	26	20	26	0
normalized size	1	1.	0.93	0.79	0.93	0.93	0.71	0.93	0.
time (sec)	N/A	0.038	0.009	0.004	0.753	0.259	0.075	0.234	0.

Problem 658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	23	20	26	24	22	24	0
normalized size	1	1.	0.88	0.77	1.	0.92	0.85	0.92	0.
time (sec)	N/A	0.037	0.008	0.005	0.827	0.246	0.09	0.241	0.

Problem 659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	9	11	11	7	11	20
normalized size	1	1.	1.	1.	1.22	1.22	0.78	1.22	2.22
time (sec)	N/A	0.039	0.005	0.009	0.785	0.23	0.056	0.267	15.553

Problem 660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	20	22	23	28	20	23	20
normalized size	1	1.	0.74	0.81	0.85	1.04	0.74	0.85	0.74
time (sec)	N/A	0.02	0.019	0.013	0.761	0.246	0.748	0.224	2.806

Problem 661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	20	20	14	20	0
normalized size	1	1.	1.	0.94	1.18	1.18	0.82	1.18	0.
time (sec)	N/A	0.055	0.01	0.011	0.777	0.242	0.115	0.265	0.

Problem 662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	11	14	14	8	14	8
normalized size	1	1.	1.	0.92	1.17	1.17	0.67	1.17	0.67
time (sec)	N/A	0.037	0.004	0.003	0.792	0.243	0.071	0.242	6.519

Problem 663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	22	22	26	28	26	26	26
normalized size	1	1.	0.81	0.81	0.96	1.04	0.96	0.96	0.96
time (sec)	N/A	0.021	0.018	0.01	0.764	0.244	0.325	0.244	2.684

Problem 664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	5	5	11	5	5	22	0	8	0
normalized size	1	1.	2.2	1.	1.	4.4	0.	1.6	0.
time (sec)	N/A	0.017	0.022	0.03	0.768	0.242	0.	0.281	0.

Problem 665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	18	22	22	32	17	26	20
normalized size	1	1.	0.86	1.05	1.05	1.52	0.81	1.24	0.95
time (sec)	N/A	0.046	0.011	0.01	0.778	0.244	0.083	0.305	8.805

Problem 666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	22	22	26	28	24	26	24
normalized size	1	1.	0.81	0.81	0.96	1.04	0.89	0.96	0.89
time (sec)	N/A	0.019	0.026	0.007	0.773	0.241	0.32	0.44	2.522

Problem 667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	79	28	53	70	0	55	26
normalized size	1	1.	2.32	0.82	1.56	2.06	0.	1.62	0.76
time (sec)	N/A	0.049	0.32	0.076	0.796	0.272	0.	0.342	7.96

Problem 668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	20	23	22	24	14	22	0
normalized size	1	1.	0.77	0.88	0.85	0.92	0.54	0.85	0.
time (sec)	N/A	0.031	0.011	0.003	0.769	0.248	0.079	0.317	0.

Problem 669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	18	18	12	18	0
normalized size	1	1.	1.	0.93	1.2	1.2	0.8	1.2	0.
time (sec)	N/A	0.047	0.007	0.009	0.772	0.255	0.102	0.297	0.

Problem 670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	21	18	23	19	22	23	22
normalized size	1	1.	0.78	0.67	0.85	0.7	0.81	0.85	0.81
time (sec)	N/A	0.043	0.015	0.003	0.753	0.241	1.191	0.298	10.244

Problem 671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	21	18	23	19	22	23	22
normalized size	1	1.	0.78	0.67	0.85	0.7	0.81	0.85	0.81
time (sec)	N/A	0.044	0.014	0.003	0.804	0.247	2.35	0.237	8.617

Problem 672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	57	50	65	92	0	66	0
normalized size	1	1.	0.92	0.81	1.05	1.48	0.	1.06	0.
time (sec)	N/A	0.096	0.075	0.025	0.857	0.253	0.	0.26	0.

Problem 673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	12	12	26	15	10	15	17
normalized size	1	1.	0.63	0.63	1.37	0.79	0.53	0.79	0.89
time (sec)	N/A	0.062	0.004	0.004	0.772	0.229	0.067	0.258	6.887

Problem 674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	19	17	38	22	15	22	27
normalized size	1	1.	0.59	0.53	1.19	0.69	0.47	0.69	0.84
time (sec)	N/A	0.075	0.005	0.003	0.773	0.242	0.071	0.241	7.069

Problem 675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	F	A	B	A	A	A	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	0	11	22	14	14	8	0	0
normalized size	1	0.	1.	2.	1.27	1.27	0.73	0.	0.
time (sec)	N/A	0.212	0.011	0.027	0.915	0.248	0.822	0.	0.

Problem 676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	7	8	8	5	8	0
normalized size	1	1.	1.	0.78	0.89	0.89	0.56	0.89	0.
time (sec)	N/A	0.04	0.002	0.007	0.758	0.233	0.103	0.392	0.

Problem 677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	F	A	A	A	A	A	F	F
verified	N/A	N/A	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	0	9	18	12	24	12	0	0
normalized size	1	0.	1.	2.	1.33	2.67	1.33	0.	0.
time (sec)	N/A	0.103	0.012	0.025	0.863	0.237	0.56	0.	0.

Problem 678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	24	28	28	22	28	0
normalized size	1	1.	1.	0.96	1.12	1.12	0.88	1.12	0.
time (sec)	N/A	0.029	0.009	0.001	0.756	0.242	0.106	0.24	0.

Problem 679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	36	45	45	37	45	0
normalized size	1	1.	1.	0.9	1.12	1.12	0.92	1.12	0.
time (sec)	N/A	0.039	0.01	0.001	0.746	0.258	0.135	0.221	0.

Problem 680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	53	48	61	61	51	61	0
normalized size	1	1.	1.	0.91	1.15	1.15	0.96	1.15	0.
time (sec)	N/A	0.051	0.012	0.003	0.763	0.241	0.167	0.302	0.

Problem 681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	26	0	1	0	39	44
normalized size	1	1.	1.	0.81	0.	0.03	0.	1.22	1.38
time (sec)	N/A	0.054	0.029	0.012	0.	0.241	0.	0.227	6.366

Problem 682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	28	0	1	0	36	42
normalized size	1	1.	1.	0.82	0.	0.03	0.	1.06	1.24
time (sec)	N/A	0.054	0.034	0.011	0.	0.24	0.	0.228	6.776

Problem 683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	50	42	0	1	0	59	75
normalized size	1	1.	0.94	0.79	0.	0.02	0.	1.11	1.42
time (sec)	N/A	0.072	0.034	0.006	0.	0.246	0.	0.381	9.179

Problem 684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	54	48	0	1	0	61	75
normalized size	1	1.	0.95	0.84	0.	0.02	0.	1.07	1.32
time (sec)	N/A	0.076	0.039	0.006	0.	0.26	0.	0.317	9.896

Problem 685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	20	22	23	28	24	23	24
normalized size	1	1.	0.74	0.81	0.85	1.04	0.89	0.85	0.89
time (sec)	N/A	0.02	0.015	0.007	0.76	0.262	0.325	0.237	2.633

Problem 686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	9	11	11	19	11	7
normalized size	1	1.	1.	0.9	1.1	1.1	1.9	1.1	0.7
time (sec)	N/A	0.04	0.006	0.005	0.856	0.298	0.11	0.243	7.637

Problem 687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	26	18	23	23	19	24	7
normalized size	1	1.	2.6	1.8	2.3	2.3	1.9	2.4	0.7
time (sec)	N/A	0.039	0.01	0.006	0.761	0.271	0.104	0.222	7.763

Problem 688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	15	19	14	0	28	14
normalized size	1	1.	1.	0.83	1.06	0.78	0.	1.56	0.78
time (sec)	N/A	0.042	0.015	0.009	0.764	0.237	0.	0.234	5.569

Problem 689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	36	18	35	63	17	45	22
normalized size	1	1.	1.8	0.9	1.75	3.15	0.85	2.25	1.1
time (sec)	N/A	0.066	0.029	0.005	0.885	0.243	0.124	0.321	15.98

Problem 690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	24	22	28	28	20	28	39
normalized size	1	1.	0.55	0.5	0.64	0.64	0.45	0.64	0.89
time (sec)	N/A	0.052	0.004	0.003	0.778	0.224	0.067	0.262	5.64

Problem 691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	26	24	41	31	24	31	48
normalized size	1	1.	0.5	0.46	0.79	0.6	0.46	0.6	0.92
time (sec)	N/A	0.064	0.006	0.005	0.783	0.226	0.069	0.233	6.243

Problem 692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	23	30	124	29	30	24
normalized size	1	1.	1.	0.7	0.91	3.76	0.88	0.91	0.73
time (sec)	N/A	0.044	0.022	0.01	0.859	0.239	1.583	0.242	5.976

Problem 693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	40	46	50	43	41	72	36
normalized size	1	1.	0.8	0.92	1.	0.86	0.82	1.44	0.72
time (sec)	N/A	0.067	0.017	0.007	0.771	0.243	4.263	0.235	8.514

Problem 694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	48	62	82	59	0	101	61
normalized size	1	1.	0.59	0.77	1.01	0.73	0.	1.25	0.75
time (sec)	N/A	0.082	0.044	0.014	0.787	0.235	0.	0.232	11.12

Problem 695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	47	59	59	49	59	0
normalized size	1	1.	1.	0.85	1.07	1.07	0.89	1.07	0.
time (sec)	N/A	0.135	0.016	0.009	0.79	0.257	0.146	0.243	0.

Problem 696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	32	27	35	154	0	35	26
normalized size	1	1.	0.91	0.77	1.	4.4	0.	1.	0.74
time (sec)	N/A	0.25	0.027	0.006	0.871	0.275	0.	0.232	18.295

Problem 697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	29	24	31	31	24	31	24
normalized size	1	1.	0.91	0.75	0.97	0.97	0.75	0.97	0.75
time (sec)	N/A	0.313	0.012	0.006	0.746	0.245	0.149	0.235	24.298

Problem 698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	5	5	5	4	4	4	3	4	3
normalized size	1	1.	1.	0.8	0.8	0.8	0.6	0.8	0.6
time (sec)	N/A	0.009	0.003	0.003	0.769	0.264	0.569	0.228	3.826

Problem 699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	5	5	5	5	0	5
normalized size	1	1.	1.	0.71	0.71	0.71	0.71	0.	0.71
time (sec)	N/A	0.024	0.007	0.003	0.817	0.236	1.002	0.	4.94

Problem 700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	20	17	22	26	17	32	20
normalized size	1	1.	0.91	0.77	1.	1.18	0.77	1.45	0.91
time (sec)	N/A	0.037	0.014	0.004	0.772	0.254	0.092	0.228	5.885

Problem 701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	4	4	9	4	15	4	7
normalized size	1	1.	1.	1.	2.25	1.	3.75	1.	1.75
time (sec)	N/A	0.017	0.005	0.004	0.851	0.241	0.093	0.24	6.337

Problem 702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	11	14	14	10	14	8
normalized size	1	1.	1.	0.85	1.08	1.08	0.77	1.08	0.62
time (sec)	N/A	0.021	0.006	0.004	0.781	0.244	0.05	0.235	6.348

Problem 703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	6	6	23	6	26	20	15	22	7
normalized size	1	1.	3.83	1.	4.33	3.33	2.5	3.67	1.17
time (sec)	N/A	0.018	0.005	0.003	0.836	0.254	0.091	0.236	8.563

Problem 704	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	11	11	14	14	10	14	10
normalized size	1	1.	0.73	0.73	0.93	0.93	0.67	0.93	0.67
time (sec)	N/A	0.026	0.01	0.002	0.79	0.258	0.053	0.234	7.2

Problem 705	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	18	28	24	15	23	15
normalized size	1	1.	1.	0.82	1.27	1.09	0.68	1.05	0.68
time (sec)	N/A	0.046	0.009	0.006	0.775	0.236	0.11	0.224	14.552

Problem 706	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	27	25	32	34	26	41	0
normalized size	1	1.	0.87	0.81	1.03	1.1	0.84	1.32	0.
time (sec)	N/A	0.065	0.013	0.01	0.815	0.265	0.137	0.235	0.

Problem 707	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	27	30	28	19	0	26
normalized size	1	1.	1.	1.23	1.36	1.27	0.86	0.	1.18
time (sec)	N/A	0.055	0.01	0.017	0.83	0.275	0.107	0.	9.902

Problem 708	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	23	40	54	34	39	0	0
normalized size	1	1.	0.68	1.18	1.59	1.	1.15	0.	0.
time (sec)	N/A	0.055	0.016	0.017	0.884	0.237	0.589	0.	0.

Problem 709	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	0	0	38	0	0	0
normalized size	1	1.	1.	0.	0.	1.65	0.	0.	0.
time (sec)	N/A	0.073	0.028	0.091	0.	0.244	0.	0.	0.

Problem 710	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	41	51	100	47	0	47	54
normalized size	1	1.	0.62	0.77	1.52	0.71	0.	0.71	0.82
time (sec)	N/A	0.269	0.029	0.013	0.782	0.248	0.	0.235	20.082

Problem 711	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	32	20	26	34	20	27	10
normalized size	1	1.	2.67	1.67	2.17	2.83	1.67	2.25	0.83
time (sec)	N/A	0.025	0.021	0.013	0.782	0.267	0.105	0.231	10.791

Problem 712	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	13	12	0	15	8	0	10
normalized size	1	1.	0.81	0.75	0.	0.94	0.5	0.	0.62
time (sec)	N/A	0.111	0.01	0.005	0.	0.229	0.088	0.	12.415

Problem 713	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	14	18	18	10	18	10
normalized size	1	1.	1.	0.88	1.12	1.12	0.62	1.12	0.62
time (sec)	N/A	0.082	0.01	0.008	0.772	0.216	0.075	0.227	9.879

Problem 714	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	23	100	138	0	45	27
normalized size	1	1.	1.	0.7	3.03	4.18	0.	1.36	0.82
time (sec)	N/A	0.057	0.025	0.016	0.792	0.26	0.	0.223	8.219

Problem 715	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	9	11	0	8	11	0
normalized size	1	1.	1.	0.82	1.	0.	0.73	1.	0.
time (sec)	N/A	0.042	0.009	0.007	0.746	0.	0.173	0.228	0.

Problem 716	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	6	6	6	6	7	7	5	7	0
normalized size	1	1.	1.	1.	1.17	1.17	0.83	1.17	0.
time (sec)	N/A	0.033	0.002	0.003	0.777	0.384	0.08	0.225	0.

Problem 717	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	17	26	24	14	0	14
normalized size	1	1.	1.	0.89	1.37	1.26	0.74	0.	0.74
time (sec)	N/A	0.027	0.008	0.004	0.808	0.283	1.081	0.	2.914

Problem 718	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	15	16	49	20	12	27	0
normalized size	1	1.	0.79	0.84	2.58	1.05	0.63	1.42	0.
time (sec)	N/A	0.154	0.008	0.007	0.839	0.246	0.071	0.22	0.

Problem 719	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	41	60	85	0	94	1	54
normalized size	1	1.	0.73	1.07	1.52	0.	1.68	0.02	0.96
time (sec)	N/A	0.067	0.024	0.012	0.801	0.	0.165	0.249	7.926

Problem 720	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	12	14	18	18	10	18	10
normalized size	1	1.	0.8	0.93	1.2	1.2	0.67	1.2	0.67
time (sec)	N/A	0.017	0.003	0.012	0.753	0.305	0.079	0.228	2.034

Problem 721	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	12	16	15	10	15	10
normalized size	1	1.	1.	0.86	1.14	1.07	0.71	1.07	0.71
time (sec)	N/A	0.019	0.005	0.004	0.78	0.277	0.149	0.224	2.697

Problem 722	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	15	15	8	15	8
normalized size	1	1.	1.	1.09	1.36	1.36	0.73	1.36	0.73
time (sec)	N/A	0.018	0.002	0.003	0.792	0.256	0.087	0.225	2.74

Problem 723	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	21	27	23	17	27	14
normalized size	1	1.	1.	1.05	1.35	1.15	0.85	1.35	0.7
time (sec)	N/A	0.013	0.006	0.002	0.811	0.255	0.104	0.229	1.003

Problem 724	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	19	19	46	22	15	22	27
normalized size	1	1.	0.59	0.59	1.44	0.69	0.47	0.69	0.84
time (sec)	N/A	0.069	0.007	0.003	0.807	0.259	0.075	0.226	7.692

Problem 725	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	28	36	46	36	36	24
normalized size	1	1.	1.	0.85	1.09	1.39	1.09	1.09	0.73
time (sec)	N/A	0.019	0.023	0.003	0.774	0.317	0.086	0.225	1.573

Problem 726	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	12	15	15	10	15	10
normalized size	1	1.	1.	0.57	0.71	0.71	0.48	0.71	0.48
time (sec)	N/A	0.02	0.008	0.004	0.79	0.398	0.152	0.229	2.701

Problem 727	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	9	11	0	0	0	8
normalized size	1	1.	1.	0.82	1.	0.	0.	0.	0.73
time (sec)	N/A	0.065	0.007	0.032	0.849	0.	0.	0.	11.833

Problem 728	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	10	22	0	0	0	0
normalized size	1	1.	1.	0.83	1.83	0.	0.	0.	0.
time (sec)	N/A	0.395	0.025	0.046	0.827	0.	0.	0.	0.

Problem 729	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	10	12	0	0	0	10
normalized size	1	1.	1.	0.83	1.	0.	0.	0.	0.83
time (sec)	N/A	0.194	0.018	0.026	0.825	0.	0.	0.	24.248

Problem 730	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.283	0.188	0.01	0.	0.	0.	0.	0.

Problem 731	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	27	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.179	0.092	0.011	0.	0.	0.	0.	0.

Problem 732	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	52	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.124	0.119	0.014	0.	0.	0.	0.	0.

Problem 733	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	16	31	0	0	0	0
normalized size	1	1.	1.	0.8	1.55	0.	0.	0.	0.
time (sec)	N/A	0.944	0.046	0.05	0.921	0.	0.	0.	0.

Problem 734	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	67	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.26	0.207	0.029	0.	0.	0.	0.	0.

Problem 735	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	9	11	0	12	11	0
normalized size	1	1.	1.	0.69	0.85	0.	0.92	0.85	0.
time (sec)	N/A	0.041	0.009	0.015	0.748	0.	0.265	0.231	0.

Problem 736	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	9	11	0	0	0	12
normalized size	1	1.	1.	0.69	0.85	0.	0.	0.	0.92
time (sec)	N/A	0.097	0.005	0.033	0.925	0.	0.	0.	16.913

Problem 737	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	38	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	0.062	0.003	0.	0.	0.	0.	0.

Problem 738	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	10	22	0	0	0	0
normalized size	1	1.	1.	0.83	1.83	0.	0.	0.	0.
time (sec)	N/A	0.503	0.025	0.014	0.828	0.	0.	0.	0.

Problem 739	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	F(-2)	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	10	22	0	0	0	10
normalized size	1	1.	1.	0.83	1.83	0.	0.	0.	0.83
time (sec)	N/A	0.204	0.02	0.035	0.822	0.	0.	0.	22.646

Problem 740	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	23	32	36	22	38	0
normalized size	1	1.	1.	0.74	1.03	1.16	0.71	1.23	0.
time (sec)	N/A	0.078	0.013	0.004	0.845	0.3	0.121	0.227	0.

Problem 741	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	12	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.045	2.856	0.015	0.	0.	0.	0.	0.

Problem 742	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	16	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.09	0.058	0.014	0.	0.	0.	0.	0.

Problem 743	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	14	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.052	0.019	0.016	0.	0.	0.	0.	0.

Problem 744	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	16	0	0	0	0	0	0	0	0
normalized size	1	0.	0.	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	0.032	0.02	0.	0.	0.	0.	0.

Problem 745	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	15	0	0	0	0	4	0	0	0
normalized size	1	0.	0.	0.	0.	0.27	0.	0.	0.
time (sec)	N/A	0.069	0.038	0.005	0.	0.215	0.	0.	0.

Problem 746	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	5	0	0	0
normalized size	1	0.	0.	0.	0.	0.26	0.	0.	0.
time (sec)	N/A	0.106	0.043	0.006	0.	0.218	0.	0.	0.

Problem 747	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	5	0	0	0
normalized size	1	0.	0.	0.	0.	0.22	0.	0.	0.
time (sec)	N/A	0.086	0.019	0.004	0.	0.219	0.	0.	0.

Problem 748	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	32	0	0	0
normalized size	1	0.	0.	0.	0.	1.1	0.	0.	0.
time (sec)	N/A	0.126	0.021	0.004	0.	0.227	0.	0.	0.

Problem 749	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	36	37	88	62	100	63	73
normalized size	1	1.	1.	1.03	2.44	1.72	2.78	1.75	2.03
time (sec)	N/A	0.154	0.065	0.009	0.81	0.267	104.7	1.74	16.599

Problem 750	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	A	F	F	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	0	241	49	0	0	0	0
normalized size	1	1.	0.	6.51	1.32	0.	0.	0.	0.
time (sec)	N/A	0.063	0.021	0.05	1.069	0.	0.	0.	0.

Problem 751	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	0	0	68	0	0	0	53
normalized size	1	1.	0.	0.	1.36	0.	0.	0.	1.06
time (sec)	N/A	0.077	0.055	0.117	1.019	0.	0.	0.	4.372

Problem 752	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	0	51	0	0	0	27
normalized size	1	1.	1.	0.	1.38	0.	0.	0.	0.73
time (sec)	N/A	0.03	0.024	0.05	0.954	0.	0.	0.	3.614

Problem 753	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	0	57	0	0	0	34
normalized size	1	1.	1.	0.	1.39	0.	0.	0.	0.83
time (sec)	N/A	0.029	0.026	0.066	0.987	0.	0.	0.	3.707

Problem 754	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	0	0	0	0	0	0	39
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.75
time (sec)	N/A	0.047	0.049	0.059	0.	0.	0.	0.	6.175

Problem 755	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	0	0	0	0	0	0	46
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.047	0.056	0.082	0.	0.	0.	0.	6.282

Problem 756	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	A	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	0	0	0	120	0	0	70
normalized size	1	1.	0.	0.	0.	1.5	0.	0.	0.88
time (sec)	N/A	0.08	0.26	0.018	0.	0.256	0.	0.	8.101

Problem 757	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	A	F(-2)	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	0	28	0	0	0	0
normalized size	1	1.	1.	0.	1.65	0.	0.	0.	0.
time (sec)	N/A	0.983	0.086	0.007	0.848	0.	0.	0.	0.

2.2 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [64] had the largest ratio of [0.7368]

Table 1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	2	2	1.	13	0.154
2	A	2	2	1.	13	0.154
3	A	3	3	1.	19	0.158
4	A	2	2	1.	21	0.095
5	A	2	2	1.	13	0.154
6	A	3	3	1.	19	0.158
7	A	2	2	1.	21	0.095
8	A	2	2	1.	13	0.154
9	A	3	3	1.	19	0.158
10	A	2	2	1.	21	0.095
11	A	2	2	1.	13	0.154
12	A	3	3	1.	19	0.158
13	A	2	2	1.	21	0.095
14	A	2	2	1.	17	0.118
15	A	3	3	1.	17	0.176
16	A	2	2	1.	29	0.069
17	A	3	3	1.	44	0.068

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
18	A	3	2	1.	15	0.133
19	A	3	2	1.	15	0.133
20	A	2	2	1.	15	0.133
21	A	3	2	1.	15	0.133
22	A	3	2	1.	17	0.118
23	A	3	2	1.	17	0.118
24	A	2	2	1.	17	0.118
25	A	3	2	1.	17	0.118
26	A	3	2	1.	19	0.105
27	A	3	2	1.	16	0.125
28	A	3	2	1.	18	0.111
29	A	3	2	1.	18	0.111
30	A	3	2	1.	18	0.111
31	A	3	2	1.	18	0.111
32	A	3	2	1.	18	0.111
33	A	2	2	1.	22	0.091
34	A	3	3	1.	23	0.13
35	A	3	3	1.	23	0.13
36	A	3	2	1.	23	0.087
37	A	4	3	1.	23	0.13
38	A	2	2	1.	13	0.154
39	A	2	2	1.	15	0.133
40	A	3	5	1.	16	0.312
41	A	8	7	1.	18	0.389
42	A	10	8	1.	18	0.444
43	A	2	2	1.	15	0.133
44	A	6	7	1.	16	0.438
45	A	9	8	1.	18	0.444
46	A	11	9	1.	18	0.5
47	A	3	3	1.	15	0.2
48	A	8	7	1.	16	0.438
49	A	16	12	1.	18	0.667
50	A	21	11	1.	18	0.611
51	A	4	3	1.	15	0.2
52	A	11	7	1.	16	0.438
53	A	24	12	1.	18	0.667
54	A	2	2	1.	15	0.133
55	A	6	6	1.	17	0.353
56	A	9	7	1.	19	0.368
57	A	11	8	1.	19	0.421
58	A	2	2	1.	15	0.133
59	A	6	6	1.	17	0.353
60	A	6	6	1.	19	0.316
61	A	7	7	1.	19	0.368
62	A	4	4	1.	15	0.267
63	A	22	9	1.	17	0.529
64	A	43	14	1.	19	0.737

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
65	A	3	3	1.	25	0.12
66	A	2	2	1.	25	0.08
67	A	2	2	1.	34	0.059
68	A	2	2	1.	34	0.059
69	A	1	1	1.	13	0.077
70	A	1	1	1.	13	0.077
71	A	1	1	1.	13	0.077
72	A	4	2	1.	13	0.154
73	A	3	2	1.	13	0.154
74	A	2	2	1.	13	0.154
75	A	1	1	1.	11	0.091
76	A	1	1	1.	13	0.077
77	A	2	2	1.	13	0.154
78	A	3	2	1.	13	0.154
79	A	4	2	1.	13	0.154
80	A	1	1	1.	13	0.077
81	A	1	1	1.	13	0.077
82	A	1	1	1.	13	0.077
83	A	1	1	1.	13	0.077
84	A	5	2	1.	13	0.154
85	A	4	2	1.	13	0.154
86	A	3	2	1.	13	0.154
87	A	2	2	1.	13	0.154
88	A	1	1	1.	9	0.111
89	A	2	2	1.	13	0.154
90	A	3	2	1.	13	0.154
91	A	4	2	1.	13	0.154
92	A	5	2	1.	13	0.154
93	A	1	1	1.	13	0.077
94	A	1	1	1.	13	0.077
95	A	1	1	1.	13	0.077
96	A	1	1	1.	13	0.077
97	A	1	1	1.	13	0.077
98	A	4	2	1.	13	0.154
99	A	3	2	1.	13	0.154
100	A	2	2	1.	13	0.154
101	A	1	1	1.	13	0.077
102	A	1	1	1.	13	0.077
103	A	2	2	1.	13	0.154
104	A	3	2	1.	13	0.154
105	A	4	2	1.	13	0.154
106	A	1	1	1.	13	0.077
107	A	1	1	1.	13	0.077
108	A	1	1	1.	13	0.077
109	A	1	1	1.	13	0.077
110	A	1	1	1.	11	0.091
111	A	1	1	1.	9	0.111

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
112	A	1	1	1.	13	0.077
113	A	1	1	1.	13	0.077
114	A	1	1	1.	11	0.091
115	A	1	1	1.	13	0.077
116	A	1	1	1.	13	0.077
117	A	1	1	1.	13	0.077
118	A	4	3	1.	13	0.231
119	A	3	3	1.	11	0.273
120	A	2	2	1.	9	0.222
121	A	1	1	1.	13	0.077
122	A	1	1	1.	13	0.077
123	A	2	2	1.	13	0.154
124	A	3	2	1.	13	0.154
125	A	4	2	1.	13	0.154
126	A	1	1	1.	13	0.077
127	A	1	1	1.	13	0.077
128	A	1	1	1.	13	0.077
129	A	1	1	1.	13	0.077
130	A	1	1	1.	13	0.077
131	A	4	2	1.	13	0.154
132	A	3	2	1.	13	0.154
133	A	2	2	1.	11	0.182
134	A	1	1	1.	13	0.077
135	A	1	1	1.	13	0.077
136	A	2	2	1.	13	0.154
137	A	3	2	1.	13	0.154
138	A	4	2	1.	13	0.154
139	A	1	1	1.	13	0.077
140	A	1	1	1.	13	0.077
141	A	1	1	1.	13	0.077
142	A	1	1	1.	13	0.077
143	A	6	4	1.	13	0.308
144	A	5	4	1.	13	0.308
145	A	4	4	1.	13	0.308
146	A	3	3	1.	9	0.333
147	A	2	2	1.	13	0.154
148	A	3	3	1.	13	0.231
149	A	4	3	1.	13	0.231
150	A	5	3	1.	13	0.231
151	A	6	3	1.	13	0.231
152	A	1	1	1.	13	0.077
153	A	1	1	1.	13	0.077
154	A	1	1	1.	13	0.077
155	A	1	1	1.	13	0.077
156	A	1	1	1.	13	0.077
157	A	4	2	1.	13	0.154
158	A	3	2	1.	13	0.154

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
159	A	2	2	1.	13	0.154
160	A	1	1	1.	13	0.077
161	A	1	1	1.	13	0.077
162	A	2	2	1.	13	0.154
163	A	3	2	1.	13	0.154
164	A	4	2	1.	13	0.154
165	A	1	1	1.	13	0.077
166	A	1	1	1.	13	0.077
167	A	1	1	1.	13	0.077
168	A	1	1	1.	13	0.077
169	A	1	1	1.	11	0.091
170	A	1	1	1.	9	0.111
171	A	1	1	1.	13	0.077
172	A	1	1	1.	13	0.077
173	A	1	1	1.	13	0.077
174	A	1	1	1.	13	0.077
175	A	1	1	1.	13	0.077
176	A	1	1	1.	13	0.077
177	A	1	1	1.	11	0.091
178	A	1	1	1.	9	0.111
179	A	1	1	1.	13	0.077
180	A	1	1	1.	13	0.077
181	A	1	1	1.	13	0.077
182	A	1	1	1.	13	0.077
183	A	3	2	1.	17	0.118
184	A	2	2	1.	17	0.118
185	A	1	1	1.	15	0.067
186	A	1	1	1.	13	0.077
187	A	2	2	1.	17	0.118
188	A	3	2	1.	17	0.118
189	A	4	3	1.	19	0.158
190	A	3	3	1.	19	0.158
191	A	2	2	1.	19	0.105
192	A	3	3	1.	19	0.158
193	A	4	3	1.	19	0.158
194	A	2	2	1.	7	0.286
195	A	8	4	1.	15	0.267
196	A	6	4	1.	15	0.267
197	A	4	3	1.	13	0.231
198	A	1	1	1.	11	0.091
199	A	0	0	0.	0	0.
200	A	0	0	0.	0	0.
201	A	0	0	0.	0	0.
202	A	5	4	1.	15	0.267
203	A	4	3	1.	13	0.231
204	A	1	1	1.	11	0.091
205	A	0	0	0.	0	0.

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
206	A	0	0	0.	0	0.
207	A	0	0	0.	0	0.
208	A	8	5	1.	33	0.152
209	A	7	5	1.	33	0.152
210	A	6	5	1.	33	0.152
211	A	5	4	1.	31	0.129
212	A	2	2	1.	29	0.069
213	A	0	0	0.	0	0.
214	A	0	0	0.	0	0.
215	A	3	3	1.	11	0.273
216	A	13	5	1.	15	0.333
217	A	12	5	1.	15	0.333
218	A	11	4	1.	15	0.267
219	A	7	4	1.	13	0.308
220	A	2	2	1.	11	0.182
221	A	4	4	1.	15	0.267
222	A	9	7	1.	15	0.467
223	A	18	7	1.	15	0.467
224	A	19	6	1.	15	0.4
225	A	14	6	1.	15	0.4
226	A	11	6	1.	15	0.4
227	A	7	6	1.	13	0.462
228	A	3	3	1.	11	0.273
229	A	0	0	0.	0	0.
230	A	0	0	0.	0	0.
231	A	0	0	0.	0	0.
232	A	8	5	1.	15	0.333
233	A	7	5	1.	15	0.333
234	A	6	5	1.	15	0.333
235	A	4	3	1.	13	0.231
236	A	1	1	1.	11	0.091
237	A	0	0	0.	0	0.
238	A	0	0	0.	0	0.
239	A	0	0	0.	0	0.
240	A	0	0	0.	0	0.
241	A	0	0	0.	0	0.
242	A	1	1	1.	13	0.077
243	A	0	0	0.	0	0.
244	A	0	0	0.	0	0.
245	A	0	0	0.	0	0.
246	A	0	0	0.	0	0.
247	A	6	3	1.	15	0.2
248	A	5	3	1.	15	0.2
249	A	4	3	1.	13	0.231
250	A	1	1	1.	11	0.091
251	A	0	0	0.	0	0.
252	A	0	0	0.	0	0.

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
253	A	0	0	0.	0	0.
254	A	1	1	1.	21	0.048
255	A	1	1	1.	21	0.048
256	A	1	1	1.	21	0.048
257	A	4	2	1.	21	0.095
258	A	3	2	1.	21	0.095
259	A	2	2	1.	21	0.095
260	A	1	1	1.	19	0.053
261	A	1	1	1.	21	0.048
262	A	2	2	1.	21	0.095
263	A	3	2	1.	21	0.095
264	A	4	2	1.	21	0.095
265	A	1	1	1.	21	0.048
266	A	1	1	1.	21	0.048
267	A	1	1	1.	21	0.048
268	A	1	1	1.	21	0.048
269	A	5	2	1.	21	0.095
270	A	4	2	1.	21	0.095
271	A	3	2	1.	21	0.095
272	A	2	2	1.	21	0.095
273	A	1	1	1.	13	0.077
274	A	2	2	1.	21	0.095
275	A	3	2	1.	21	0.095
276	A	4	2	1.	21	0.095
277	A	5	2	1.	21	0.095
278	A	1	1	1.	21	0.048
279	A	1	1	1.	21	0.048
280	A	1	1	1.	21	0.048
281	A	1	1	1.	21	0.048
282	A	1	1	1.	21	0.048
283	A	4	2	1.	21	0.095
284	A	3	2	1.	21	0.095
285	A	2	2	1.	21	0.095
286	A	1	1	1.	21	0.048
287	A	1	1	1.	21	0.048
288	A	2	2	1.	21	0.095
289	A	3	2	1.	21	0.095
290	A	4	2	1.	21	0.095
291	A	1	1	1.	21	0.048
292	A	1	1	1.	21	0.048
293	A	1	1	1.	21	0.048
294	A	1	1	1.	19	0.053
295	A	1	1	1.	13	0.077
296	A	1	1	1.	21	0.048
297	A	1	1	1.	21	0.048
298	A	1	1	1.	21	0.048
299	A	3	3	1.	15	0.2

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
300	A	4	3	1.	15	0.2
301	A	1	1	1.	21	0.048
302	A	1	1	1.	21	0.048
303	A	1	1	1.	21	0.048
304	A	4	3	1.	21	0.143
305	A	3	3	1.	19	0.158
306	A	2	2	1.	13	0.154
307	A	1	1	1.	21	0.048
308	A	1	1	1.	21	0.048
309	A	2	2	1.	21	0.095
310	A	3	2	1.	21	0.095
311	A	4	2	1.	21	0.095
312	A	1	1	1.	21	0.048
313	A	1	1	1.	21	0.048
314	A	1	1	1.	21	0.048
315	A	1	1	1.	21	0.048
316	A	1	1	1.	21	0.048
317	A	4	2	1.	21	0.095
318	A	3	2	1.	21	0.095
319	A	2	2	1.	19	0.105
320	A	1	1	1.	21	0.048
321	A	1	1	1.	21	0.048
322	A	2	2	1.	21	0.095
323	A	3	2	1.	21	0.095
324	A	4	2	1.	21	0.095
325	A	1	1	1.	21	0.048
326	A	1	1	1.	21	0.048
327	A	1	1	1.	21	0.048
328	A	1	1	1.	21	0.048
329	A	6	4	1.	21	0.19
330	A	5	4	1.	21	0.19
331	A	4	4	1.	21	0.19
332	A	3	3	1.	13	0.231
333	A	2	2	1.	21	0.095
334	A	3	3	1.	21	0.143
335	A	4	3	1.	21	0.143
336	A	5	3	1.	21	0.143
337	A	6	3	1.	21	0.143
338	A	1	1	1.	21	0.048
339	A	1	1	1.	21	0.048
340	A	1	1	1.	21	0.048
341	A	1	1	1.	21	0.048
342	A	1	1	1.	21	0.048
343	A	4	2	1.	21	0.095
344	A	3	2	1.	21	0.095
345	A	2	2	1.	21	0.095
346	A	1	1	1.	21	0.048

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
347	A	1	1	1.	21	0.048
348	A	2	2	1.	21	0.095
349	A	3	2	1.	21	0.095
350	A	4	2	1.	21	0.095
351	A	1	1	1.	21	0.048
352	A	1	1	1.	21	0.048
353	A	1	1	1.	21	0.048
354	A	1	1	1.	19	0.053
355	A	1	1	1.	13	0.077
356	A	1	1	1.	21	0.048
357	A	1	1	1.	21	0.048
358	A	1	1	1.	21	0.048
359	A	1	1	1.	21	0.048
360	A	1	1	1.	21	0.048
361	A	1	1	1.	21	0.048
362	A	1	1	1.	19	0.053
363	A	1	1	1.	13	0.077
364	A	1	1	1.	21	0.048
365	A	1	1	1.	21	0.048
366	A	1	1	1.	21	0.048
367	A	1	1	1.	21	0.048
368	A	1	1	1.	25	0.04
369	A	1	1	1.	25	0.04
370	A	4	2	1.	25	0.08
371	A	3	2	1.	25	0.08
372	A	2	2	1.	25	0.08
373	A	1	1	1.	23	0.043
374	A	1	1	1.	21	0.048
375	A	2	2	1.	25	0.08
376	A	3	2	1.	25	0.08
377	A	4	2	1.	25	0.08
378	A	1	1	1.	25	0.04
379	A	1	1	1.	25	0.04
380	A	2	2	1.	25	0.08
381	A	2	2	1.	26	0.077
382	A	14	4	1.	21	0.19
383	A	11	4	1.	21	0.19
384	A	8	4	1.	21	0.19
385	A	6	4	1.	21	0.19
386	A	4	3	1.	19	0.158
387	A	1	1	1.	13	0.077
388	A	0	0	0.	0	0.
389	A	0	0	0.	0	0.
390	A	0	0	0.	0	0.
391	A	6	4	1.	19	0.21
392	A	5	4	1.	19	0.21
393	A	4	3	1.	17	0.176

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
394	A	1	1	1.	11	0.091
395	A	0	0	0.	0	0.
396	A	0	0	0.	0	0.
397	A	4	4	1.	21	0.19
398	A	9	7	1.	21	0.333
399	A	18	7	1.	21	0.333
400	A	36	7	1.	21	0.333
401	A	13	5	1.	19	0.263
402	A	12	5	1.	19	0.263
403	A	11	4	1.	19	0.21
404	A	7	4	1.	17	0.235
405	A	2	2	1.	11	0.182
406	A	4	4	1.	19	0.21
407	A	9	7	1.	19	0.368
408	A	18	7	1.	19	0.368
409	A	14	6	1.	19	0.316
410	A	11	6	1.	19	0.316
411	A	7	6	1.	17	0.353
412	A	3	3	1.	11	0.273
413	A	0	0	0.	0	0.
414	A	0	0	0.	0	0.
415	A	0	0	0.	0	0.
416	A	7	5	1.	19	0.263
417	A	6	5	1.	19	0.263
418	A	4	3	1.	17	0.176
419	A	1	1	1.	11	0.091
420	A	0	0	0.	0	0.
421	A	0	0	0.	0	0.
422	A	5	5	1.	26	0.192
423	A	12	8	1.	26	0.308
424	A	24	8	1.	26	0.308
425	A	48	8	1.	26	0.308
426	A	10	4	1.	16	0.25
427	A	6	4	1.	16	0.25
428	A	3	3	1.	14	0.214
429	A	2	2	1.	12	0.167
430	A	0	0	0.	0	0.
431	A	0	0	0.	0	0.
432	A	10	4	1.	17	0.235
433	A	6	4	1.	17	0.235
434	A	3	3	1.	15	0.2
435	A	2	2	1.	13	0.154
436	A	0	0	0.	0	0.
437	A	0	0	0.	0	0.
438	A	11	5	1.	17	0.294
439	A	7	5	1.	17	0.294
440	A	4	4	1.	15	0.267

Continued on next page

Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
441	A	3	3	1.	13	0.231
442	A	0	0	0.	0	0.
443	A	0	0	0.	0	0.
444	A	10	4	1.	20	0.2
445	A	6	4	1.	20	0.2
446	A	3	3	1.	18	0.167
447	A	0	0	0.	0	0.
448	A	0	0	0.	0	0.
449	A	0	0	0.	0	0.
450	A	2	2	1.	21	0.095
451	A	3	3	1.	21	0.143
452	A	1	1	1.	19	0.053
453	A	1	1	1.	21	0.048
454	A	3	3	1.	21	0.143
455	A	2	2	1.	21	0.095
456	A	2	2	1.	20	0.1
457	A	3	3	1.	20	0.15
458	A	1	1	1.	18	0.056
459	A	1	1	1.	20	0.05
460	A	3	3	1.	20	0.15
461	A	2	2	1.	20	0.1
462	A	8	4	1.	20	0.2
463	A	7	2	1.	20	0.1
464	A	4	2	1.	17	0.118
465	A	4	2	1.	18	0.111
466	A	7	4	1.	20	0.2
467	A	9	3	1.	23	0.13
468	A	7	2	1.	23	0.087
469	A	4	2	1.	20	0.1
470	A	4	2	1.	21	0.095
471	A	7	3	1.	23	0.13
472	A	9	4	1.	23	0.174
473	A	3	2	1.	13	0.154
474	A	3	2	1.	15	0.133
475	A	3	2	1.	14	0.143
476	A	3	2	1.	16	0.125
477	A	3	2	1.	15	0.133
478	A	3	2	1.	17	0.118
479	A	3	2	1.	16	0.125
480	A	3	2	1.	18	0.111
481	A	2	2	1.	13	0.154
482	A	2	2	1.	15	0.133
483	A	2	2	1.	14	0.143
484	A	2	2	1.	16	0.125
485	A	4	4	1.	15	0.267
486	A	4	4	1.	15	0.267
487	A	4	4	1.	16	0.25

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
488	A	4	4	1.	16	0.25
489	A	3	3	1.	15	0.2
490	A	3	3	1.	17	0.176
491	A	3	3	1.	16	0.188
492	A	3	3	1.	18	0.167
493	A	2	2	1.	17	0.118
494	A	2	2	1.	17	0.118
495	A	2	2	1.	18	0.111
496	A	2	2	1.	18	0.111
497	A	3	2	1.	15	0.133
498	A	3	2	1.	17	0.118
499	A	3	2	1.	16	0.125
500	A	3	2	1.	18	0.111
501	A	5	4	1.	17	0.235
502	A	5	4	1.	19	0.21
503	A	5	4	1.	18	0.222
504	A	5	4	1.	20	0.2
505	A	3	2	1.	14	0.143
506	A	6	5	1.	14	0.357
507	A	6	5	1.	12	0.417
508	A	7	7	1.	14	0.5
509	A	7	7	1.	16	0.438
510	A	11	11	1.	16	0.688
511	A	9	5	1.	16	0.312
512	A	9	5	1.	14	0.357
513	A	9	5	1.	16	0.312
514	A	9	5	1.	18	0.278
515	A	12	10	1.	18	0.556
516	A	11	6	1.	18	0.333
517	A	11	6	1.	16	0.375
518	A	11	6	1.	18	0.333
519	A	11	6	1.	20	0.3
520	A	3	2	1.	23	0.087
521	A	7	7	1.	25	0.28
522	A	7	7	1.	24	0.292
523	A	11	11	1.	25	0.44
524	A	9	5	1.	27	0.185
525	A	12	10	1.	27	0.37
526	A	11	6	1.	29	0.207
527	A	7	6	1.	37	0.162
528	A	7	6	1.	36	0.167
529	A	2	2	1.	12	0.167
530	A	7	7	1.	14	0.5
531	A	7	7	1.	16	0.438
532	A	2	2	1.	21	0.095
533	A	7	7	1.	23	0.304
534	A	7	7	1.	25	0.28

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
535	A	2	2	1.	12	0.167
536	A	4	3	1.	16	0.188
537	A	4	4	1.	16	0.25
538	A	8	5	1.	18	0.278
539	A	10	6	1.	20	0.3
540	A	4	4	1.	25	0.16
541	A	8	5	1.	27	0.185
542	A	10	6	1.	29	0.207
543	A	0	0	0.	0	0.
544	A	6	3	1.	50	0.06
545	A	5	3	1.	50	0.06
546	A	4	3	1.	48	0.062
547	A	3	2	1.	21	0.095
548	A	0	0	0.	0	0.
549	A	0	0	0.	0	0.
550	A	0	0	0.	0	0.
551	A	6	3	1.	47	0.064
552	A	5	3	1.	47	0.064
553	A	4	3	1.	45	0.067
554	A	1	1	1.	14	0.071
555	A	0	0	0.	0	0.
556	A	0	0	0.	0	0.
557	A	3	3	1.	37	0.081
558	A	2	2	1.	36	0.056
559	A	2	2	1.	36	0.056
560	A	2	2	1.	35	0.057
561	A	2	2	1.	36	0.056
562	A	2	2	1.	36	0.056
563	A	4	3	1.	10	0.3
564	A	3	3	1.	8	0.375
565	A	2	2	1.	7	0.286
566	A	2	2	1.	10	0.2
567	A	3	3	1.	10	0.3
568	A	4	3	1.	10	0.3
569	A	3	2	1.	10	0.2
570	A	2	2	1.	9	0.222
571	A	4	3	1.	12	0.25
572	A	13	7	1.	44	0.159
573	A	11	6	1.	44	0.136
574	A	9	5	1.	42	0.119
575	A	7	6	1.	37	0.162
576	A	0	0	0.	0	0.
577	A	0	0	0.	0	0.
578	A	9	5	1.	47	0.106
579	A	4	4	1.	18	0.222
580	A	4	4	1.	16	0.25
581	A	4	4	1.	14	0.286

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
582	A	4	4	1.	18	0.222
583	A	4	4	1.	18	0.222
584	A	4	4	1.	18	0.222
585	A	4	4	1.	20	0.2
586	A	3	3	1.	18	0.167
587	A	3	3	1.	16	0.188
588	A	3	3	1.	14	0.214
589	A	2	2	1.	18	0.111
590	A	3	3	1.	18	0.167
591	A	3	3	1.	18	0.167
592	A	3	3	1.	20	0.15
593	A	6	6	1.	18	0.333
594	A	6	6	1.	16	0.375
595	A	6	6	1.	14	0.429
596	A	6	6	1.	18	0.333
597	A	6	6	1.	18	0.333
598	A	6	6	1.	18	0.333
599	A	7	7	1.	20	0.35
600	A	1	1	1.	21	0.048
601	A	1	1	1.	33	0.03
602	A	2	2	1.	31	0.065
603	A	5	3	1.	31	0.097
604	A	4	3	1.	31	0.097
605	A	3	3	1.	29	0.103
606	A	1	1	1.	19	0.053
607	A	2	2	1.	31	0.065
608	A	3	3	1.	31	0.097
609	A	4	3	1.	31	0.097
610	A	7	4	1.	33	0.121
611	A	6	4	1.	33	0.121
612	A	5	4	1.	33	0.121
613	A	4	4	1.	33	0.121
614	A	3	3	1.	33	0.091
615	A	4	4	1.	33	0.121
616	A	5	4	1.	33	0.121
617	A	6	4	1.	33	0.121
618	A	7	4	1.	33	0.121
619	A	2	2	1.	19	0.105
620	A	2	2	1.	13	0.154
621	A	2	2	1.	15	0.133
622	A	2	2	1.	15	0.133
623	A	3	3	1.	17	0.176
624	A	2	2	1.	9	0.222
625	A	3	3	1.	17	0.176
626	A	3	3	1.	18	0.167
627	A	2	2	1.	13	0.154
628	A	1	1	1.	11	0.091

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
629	A	2	1	1.	9	0.111
630	A	3	2	1.	17	0.118
631	A	2	2	1.	17	0.118
632	A	2	2	1.	15	0.133
633	A	3	2	1.	13	0.154
634	A	3	2	1.	16	0.125
635	A	2	2	1.	13	0.154
636	A	2	2	1.	13	0.154
637	A	4	3	1.17	23	0.13
638	A	4	3	1.2	23	0.13
639	A	4	3	1.	27	0.111
640	A	2	2	1.	15	0.133
641	A	1	1	1.	17	0.059
642	A	4	4	1.	15	0.267
643	A	3	3	1.	15	0.2
644	A	3	3	1.	15	0.2
645	A	3	3	1.	18	0.167
646	A	3	3	1.	11	0.273
647	A	3	3	1.	15	0.2
648	A	2	2	1.	15	0.133
649	A	2	2	1.	15	0.133
650	A	2	2	1.	17	0.118
651	A	2	2	1.	17	0.118
652	A	1	1	1.	9	0.111
653	A	1	1	1.	11	0.091
654	A	1	1	1.	13	0.077
655	A	1	1	1.	13	0.077
656	A	13	3	1.	16	0.188
657	A	5	3	1.	7	0.429
658	A	3	2	1.	20	0.1
659	A	2	2	1.	18	0.111
660	A	1	1	1.	10	0.1
661	A	4	3	1.	20	0.15
662	A	3	2	1.	13	0.154
663	A	1	1	1.	10	0.1
664	A	2	2	1.	8	0.25
665	A	3	2	1.	15	0.133
666	A	1	1	1.	10	0.1
667	A	3	3	1.	14	0.214
668	A	6	3	1.	11	0.273
669	A	4	3	1.	18	0.167
670	A	3	2	1.	15	0.133
671	A	3	2	1.	15	0.133
672	A	4	4	1.	32	0.125
673	A	8	4	1.	11	0.364
674	A	8	4	1.	13	0.308
675	F	0	0	N/A	0	N/A

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
676	A	2	2	1.	23	0.087
677	F	0	0	N/A	0	N/A
678	A	3	2	1.	9	0.222
679	A	3	2	1.	9	0.222
680	A	3	2	1.	9	0.222
681	A	3	3	1.	15	0.2
682	A	3	3	1.	17	0.176
683	A	4	4	1.	15	0.267
684	A	4	4	1.	17	0.235
685	A	1	1	1.	10	0.1
686	A	3	3	1.	15	0.2
687	A	3	3	1.	15	0.2
688	A	2	2	1.	17	0.118
689	A	3	3	1.	18	0.167
690	A	4	2	1.	9	0.222
691	A	4	2	1.	11	0.182
692	A	3	3	1.	17	0.176
693	A	3	2	1.	19	0.105
694	A	3	2	1.	17	0.118
695	A	4	3	1.	15	0.2
696	A	4	4	1.	22	0.182
697	A	4	3	1.	22	0.136
698	A	2	2	1.	7	0.286
699	A	3	2	1.	12	0.167
700	A	4	3	1.	11	0.273
701	A	2	2	1.	11	0.182
702	A	2	2	1.	11	0.182
703	A	2	2	1.	13	0.154
704	A	2	2	1.	13	0.154
705	A	3	2	1.	17	0.118
706	A	4	3	1.	17	0.176
707	A	3	2	1.	13	0.154
708	A	3	2	1.	15	0.133
709	A	3	2	1.	25	0.08
710	A	15	4	1.	18	0.222
711	A	3	3	1.	13	0.231
712	A	6	4	1.	15	0.267
713	A	1	1	1.	16	0.062
714	A	3	3	1.	19	0.158
715	A	1	1	1.	15	0.067
716	A	1	1	1.	13	0.077
717	A	2	2	1.	9	0.222
718	A	6	4	1.	16	0.25
719	A	3	2	1.	15	0.133
720	A	1	1	1.	9	0.111
721	A	1	1	1.	13	0.077
722	A	1	1	1.	9	0.111

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
723	A	3	1	1.	9	0.111
724	A	8	3	1.	14	0.214
725	A	2	1	1.	15	0.067
726	A	1	1	1.	13	0.077
727	A	2	1	1.	23	0.043
728	A	6	3	1.	28	0.107
729	A	4	2	1.	37	0.054
730	A	0	0	0.	0	0.
731	A	0	0	0.	0	0.
732	A	0	0	0.	0	0.
733	A	4	2	1.	50	0.04
734	A	0	0	0.	0	0.
735	A	1	1	1.	16	0.062
736	A	2	1	1.	34	0.029
737	A	0	0	0.	0	0.
738	A	8	4	1.	23	0.174
739	A	4	2	1.	39	0.051
740	A	3	2	1.	26	0.077
741	A	0	0	0.	0	0.
742	A	0	0	0.	0	0.
743	A	0	0	0.	0	0.
744	A	0	0	0.	0	0.
745	A	0	0	0.	0	0.
746	A	0	0	0.	0	0.
747	A	0	0	0.	0	0.
748	A	0	0	0.	0	0.
749	A	4	3	1.	23	0.13
750	A	2	2	1.	15	0.133
751	A	2	2	1.	19	0.105
752	A	1	1	1.	9	0.111
753	A	1	1	1.	9	0.111
754	A	1	1	1.	17	0.059
755	A	1	1	1.	17	0.059
756	A	4	3	1.	11	0.273
757	A	8	4	1.	43	0.093

3 Listing of integrals

3.1 $\int \frac{e^x}{4+6e^x} \, dx$

Optimal. Leaf size=12

$$\frac{1}{6}\log\left(3e^x+2\right)$$

```
[Out] Log[2 + 3*E^x]/6
```

Rubi [A] time = 0.032852, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{6}\log\left(3e^x+2\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^x/(4 + 6*E^x),x]

[Out] Log[2 + 3*E^x]/6
```

Rubi in Sympy [A] time = 6.9181, size = 8, normalized size = 0.67

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)/(4+6*exp(x)),x)

[Out] log(3*exp(x) + 2)/6
```

Mathematica [A] time = 0.00338894, size = 12, normalized size = 1.

$$\frac{1}{6}\log\left(6e^x+4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x/(4 + 6*E^x),x]

[Out] Log[4 + 6*E^x]/6
```

Maple [A] time = 0.003, size = 10, normalized size = 0.8

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(4+6*exp(x)),x)
```

```
[Out] 1/6*ln(2+3*exp(x))
```

Maxima [A] time = 0.759142, size = 12, normalized size = 1.

$$\frac{1}{6}\log\left(3e^{x}+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2*e^x/(3*e^x + 2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.253753, size = 12, normalized size = 1.

$$\frac{1}{6}\log\left(3e^{x}+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2*e^x/(3*e^x + 2),x, algorithm="fricas")
```

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

Sympy [A] time = 0.129865, size = 8, normalized size = 0.67

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(4+6*exp(x)),x)
```

```
[Out] log(exp(x) + 2/3)/6
```

GIAC/XCAS [A] time = 0.225902, size = 12, normalized size = 1.

$$\frac{1}{6}\ln\left(3e^{x}+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2*e^x/(3*e^x + 2),x, algorithm="giac")
```

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

3.2 $\int \frac{e^x}{a+be^x}\,dx$

Optimal. Leaf size=12

$$\frac{\log(a+be^x)}{b}$$

```
[Out] Log[a + b*E^x]/b
```

Rubi [A] time = 0.0339316, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{\log(a+be^x)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[E^x/(a + b*E^x),x]

[Out] Log[a + b*E^x]/b
```

Rubi in Sympy [A] time = 6.93766, size = 8, normalized size = 0.67

$$\frac{\log(a+be^x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)/(a+b*exp(x)),x)

[Out] log(a + b*exp(x))/b
```

Mathematica [A] time = 0.00343598, size = 12, normalized size = 1.

$$\frac{\log(a+be^x)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x/(a + b*E^x),x]

[Out] Log[a + b*E^x]/b
```

Maple [A] time = 0.003, size = 12, normalized size = 1.

$$\frac{\ln(a+be^x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)/(a+b*exp(x)),x)
```

```
[Out] ln(a+b*exp(x))/b
```

Maxima [A] time = 0.794781, size = 15, normalized size = 1.25

$$\frac{\log\left(be^{x}+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(b*e^x + a),x, algorithm="maxima")

[Out] log(b*e^x + a)/b
```

Fricas [A] time = 0.296313, size = 15, normalized size = 1.25

$$\frac{\log\left(be^{x}+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(b*e^x + a),x, algorithm="fricas")

[Out] log(b*e^x + a)/b
```

Sympy [A] time = 0.201134, size = 8, normalized size = 0.67

$$\frac{\log\left(\frac{a}{b}+e^{x}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(a+b*exp(x)),x)

[Out] log(a/b + exp(x))/b
```

GIAC/XCAS [A] time = 0.235233, size = 16, normalized size = 1.33

$$\frac{\ln\left(|be^{x}+a|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(b*e^x + a),x, algorithm="giac")

[Out] ln(abs(b*e^x + a))/b
```

3.3 $\int \frac{e^{dx}}{a+be^{c+dx}}\,dx$

Optimal. Leaf size=24

$$\frac{e^{-c}\log\left(a+be^{c+dx}\right)}{bd}$$

```
[Out] Log[a + b*E^(c + d*x)]/(b*d*E^c)
```

Rubi [A] time = 0.112198, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{e^{-c}\log\left(a+be^{c+dx}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(d*x)/(a + b*E^(c + d*x)),x]

[Out] Log[a + b*E^(c + d*x)]/(b*d*E^c)
```

Rubi in Sympy [A] time = 8.97952, size = 17, normalized size = 0.71

$$\frac{e^{-c}\log\left(a+be^{c+dx}\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(d*x)/(a+b*exp(d*x+c)),x)

[Out] exp(-c)*log(a + b*exp(c + d*x))/(b*d)
```

Mathematica [A] time = 0.00726809, size = 24, normalized size = 1.

$$\frac{e^{-c}\log\left(a+be^{c+dx}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(d*x)/(a + b*E^(c + d*x)),x]

[Out] Log[a + b*E^(c + d*x)]/(b*d*E^c)
```

Maple [A] time = 0.004, size = 23, normalized size = 1.

$$\frac{\ln\left(a+b{e}^{dx}{e}^{c}\right)}{d{e}^{c}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(d*x)/(a+b*exp(d*x+c)),x)
```

```
[Out] 1/d*ln(a+b*exp(d*x)*exp(c))/exp(c)/b
```

Maxima [A] time = 0.783305, size = 30, normalized size = 1.25

$$\frac{e^{(-c)} \log\left(be^{(dx+c)} + a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 0.246707, size = 30, normalized size = 1.25

$$\frac{e^{(-c)} \log\left(be^{(dx+c)} + a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.329835, size = 19, normalized size = 0.79

$$\frac{e^{-c} \log\left(\frac{ae^{-c}}{b} + e^{dx}\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(d*x)/(a+b*exp(d*x+c)),x)
```

```
[Out] exp(-c)*log(a*exp(-c)/b + exp(d*x))/(b*d)
```

GIAC/XCAS [A] time = 0.222208, size = 31, normalized size = 1.29

$$\frac{e^{(-c)}\ln\left(\left|be^{(dx+c)} + a\right|\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.4 $\int \frac{e^{c+dx}}{a+be^{c+dx}}\,dx$

Optimal. Leaf size=19

$$\frac{\log\left(a+be^{c+dx}\right)}{bd}$$

```
[Out] Log[a + b*E^(c + d*x)]/(b*d)
```

Rubi [A] time = 0.0593037, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{\log\left(a+be^{c+dx}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(c + d*x)/(a + b*E^(c + d*x)),x]

[Out] Log[a + b*E^(c + d*x)]/(b*d)
```

Rubi in Sympy [A] time = 9.04307, size = 14, normalized size = 0.74

$$\frac{\log\left(a+be^{c+dx}\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(d*x+c)/(a+b*exp(d*x+c)),x)

[Out] log(a + b*exp(c + d*x))/(b*d)
```

Mathematica [A] time = 0.00345614, size = 19, normalized size = 1.

$$\frac{\log\left(a+be^{c+dx}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(c + d*x)/(a + b*E^(c + d*x)),x]

[Out] Log[a + b*E^(c + d*x)]/(b*d)
```

Maple [A] time = 0.003, size = 19, normalized size = 1.

$$\frac{\ln\left(a+b\mathrm{e}^{dx+c}\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(d*x+c)/(a+b*exp(d*x+c)),x)
```

```
[Out] ln(a+b*exp(d*x+c))/b/d
```

Maxima [A] time = 0.809324, size = 24, normalized size = 1.26

$$\frac{\log\left(be^{(dx+c)} + a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] log(b*e^(d*x + c) + a)/(b*d)
```

Fricas [A] time = 0.261944, size = 24, normalized size = 1.26

$$\frac{\log\left(be^{(dx+c)} + a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] log(b*e^(d*x + c) + a)/(b*d)
```

Sympy [A] time = 0.253491, size = 14, normalized size = 0.74

$$\frac{\log\left(\frac{a}{b} + e^{c+dx}\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(d*x+c)/(a+b*exp(d*x+c)),x)
```

```
[Out] log(a/b + exp(c + d*x))/(b*d)
```

GIAC/XCAS [A] time = 0.23, size = 26, normalized size = 1.37

$$\frac{\ln\left(\left|be^{(dx+c)} + a\right|\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ln(abs(b*e^(d*x + c) + a))/(b*d)
```

3.5 $\int e^x (a + be^x)^n \, dx$

Optimal. Leaf size=20

$$\frac{(a + be^x)^{n+1}}{b(n + 1)}$$

```
[Out] (a + b*E^x)^(1 + n)/(b*(1 + n))
```

Rubi [A] time = 0.0373475, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{(a + be^x)^{n+1}}{b(n + 1)}$$

Antiderivative was successfully verified.

```
[In] Int[E^x*(a + b*E^x)^n,x]

[Out] (a + b*E^x)^(1 + n)/(b*(1 + n))
```

Rubi in Sympy [A] time = 6.26518, size = 14, normalized size = 0.7

$$\frac{(a + be^x)^{n+1}}{b\,(n + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)*(a+b*exp(x))**n,x)

[Out] (a + b*exp(x))**(n + 1)/(b*(n + 1))
```

Mathematica [A] time = 0.022402, size = 19, normalized size = 0.95

$$\frac{(a + be^x)^{n+1}}{bn + b}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x*(a + b*E^x)^n,x]

[Out] (a + b*E^x)^(1 + n)/(b + b*n)
```

Maple [A] time = 0.002, size = 20, normalized size = 1.

$$\frac{(a + be^x)^{1+n}}{b\,(1 + n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)*(a+b*exp(x))^n,x)
```

```
[Out] (a+b*exp(x))^(1+n)/b/(1+n)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^n*e^x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.247985, size = 30, normalized size = 1.5

$$\frac{(be^x + a)(be^x + a)^n}{bn + b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^n*e^x,x, algorithm="fricas")
```

```
[Out] (b*e^x + a)*(b*e^x + a)^n/(b*n + b)
```

Sympy [A] time = 2.7679, size = 56, normalized size = 2.8

$$\begin{cases} \frac{e^x}{a} & \text{for } b = 0 \wedge n = -1 \\ a^n e^x & \text{for } b = 0 \\ \frac{\log\left(\frac{a}{b} + e^x\right)}{b} & \text{for } n = -1 \\ \frac{a(a+be^x)^n}{bn+b} + \frac{b(a+be^x)^n e^x}{bn+b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(a+b*exp(x))**n,x)
```

```
[Out] Piecewise((exp(x)/a, Eq(b, 0) & Eq(n, -1)), (a**n*exp(x), Eq(b, 0
)), (log(a/b + exp(x))/b, Eq(n, -1)), (a*(a + b*exp(x))**n/(b*n +
 b) + b*(a + b*exp(x))**n*exp(x)/(b*n + b), True))
```

GIAC/XCAS [A] time = 0.23383, size = 26, normalized size = 1.3

$$\frac{(be^x + a)^{n+1}}{b(n + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^n*e^x,x, algorithm="giac")
```

```
[Out] (b*e^x + a)^(n + 1)/(b*(n + 1))
```

3.6 $\int e^{dx} \left(a+be^{c+dx}\right)^n \, dx$

Optimal. Leaf size=32

$$\frac{e^{-c} \left(a+be^{c+dx}\right)^{n+1}}{bd(n+1)}$$

```
[Out] (a + b*E^(c + d*x))^(1 + n)/(b*d*E^c*(1 + n))
```

Rubi [A] time = 0.114404, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{e^{-c} \left(a+be^{c+dx}\right)^{n+1}}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[E^(d*x)*(a + b*E^(c + d*x))^n,x]
```

```
[Out] (a + b*E^(c + d*x))^(1 + n)/(b*d*E^c*(1 + n))
```

Rubi in Sympy [A] time = 8.51479, size = 22, normalized size = 0.69

$$\frac{\left(a+be^{c+dx}\right)^{n+1} e^{-c}}{bd\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(d*x)*(a+b*exp(d*x+c))**n,x)
```

```
[Out] (a + b*exp(c + d*x))**(n + 1)*exp(-c)/(b*d*(n + 1))
```

Mathematica [A] time = 0.0438236, size = 31, normalized size = 0.97

$$\frac{e^{-c} \left(a+be^{c+dx}\right)^{n+1}}{bdn+bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(d*x)*(a + b*E^(c + d*x))^n,x]
```

```
[Out] (a + b*E^(c + d*x))^(1 + n)/(E^c*(b*d + b*d*n))
```

Maple [A] time = 0.006, size = 31, normalized size = 1.

$$\frac{\left(a+b\mathrm{e}^{dx}\mathrm{e}^{c}\right)^{1+n}}{d\mathrm{e}^{c}b\,(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(d*x)*(a+b*exp(d*x+c))^n,x)
```

```
[Out] 1/d*(a+b*exp(d*x)*exp(c))^(1+n)/exp(c)/b/(1+n)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(d*x + c) + a)^n*e^(d*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.253913, size = 49, normalized size = 1.53

$$\frac{\left(be^{(dx)}+ae^{(-c)}\right)\left(be^{(dx+c)}+a\right)^{n}}{bdn+bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(d*x + c) + a)^n*e^(d*x),x, algorithm="fricas")
```

```
[Out] (b*e^(d*x) + a*e^(-c))*(b*e^(d*x + c) + a)^n/(b*d*n + b*d)
```

Sympy [A] time = 164.253, size = 114, normalized size = 3.56

$$\begin{cases} \frac{x}{a} & \text{for}\: b = 0 \wedge d = 0 \wedge n = -1 \\ \frac{a^{n} e^{dx}}{d} & \text{for}\: b = 0 \\ x\left(a+be^{c}\right)^{n} & \text{for}\: d = 0 \\ \frac{e^{-c}\log\left(\frac{a}{b}+e^{c}e^{dx}\right)}{bd} & \text{for}\: n = -1 \\ \frac{a\left(a+be^{c}e^{dx}\right)^{n}}{bdne^{c}+bde^{c}} + \frac{b\left(a+be^{c}e^{dx}\right)^{n}e^{c}e^{dx}}{bdne^{c}+bde^{c}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(d*x)*(a+b*exp(d*x+c))**n,x)
```

```
[Out] Piecewise((x/a, Eq(b, 0) & Eq(d, 0) & Eq(n, -1)), (a**n*exp(d*x)/
d, Eq(b, 0)), (x*(a + b*exp(c))**n, Eq(d, 0)), (exp(-c)*log(a/b +
 exp(c)*exp(d*x))/(b*d), Eq(n, -1)), (a*(a + b*exp(c)*exp(d*x))**
n/(b*d*n*exp(c) + b*d*exp(c)) + b*(a + b*exp(c)*exp(d*x))**n*exp(
c)*exp(d*x)/(b*d*n*exp(c) + b*d*exp(c)), True))
```

GIAC/XCAS [A] time = 0.22833, size = 41, normalized size = 1.28

$$\frac{\left(be^{(dx+c)}+a\right)^{n+1}e^{(-c)}}{bd(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(d*x + c) + a)^n*e^(d*x),x, algorithm="giac")
```

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

3.7 $\int e^{c+dx} \left(a + b e^{c+dx}\right)^n \, dx$

Optimal. Leaf size=27

$$\frac{\left(a + b e^{c+dx}\right)^{n+1}}{bd(n+1)}$$

```
[Out] (a + b*E^(c + d*x))^(1 + n)/(b*d*(1 + n))
```

Rubi [A] time = 0.0622738, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{\left(a + b e^{c+dx}\right)^{n+1}}{bd(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c + d*x)*(a + b*E^(c + d*x))^n,x]
```

```
[Out] (a + b*E^(c + d*x))^(1 + n)/(b*d*(1 + n))
```

Rubi in Sympy [A] time = 8.32308, size = 19, normalized size = 0.7

$$\frac{\left(a + b e^{c+dx}\right)^{n+1}}{bd\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(d*x+c)*(a+b*exp(d*x+c))**n,x)
```

```
[Out] (a + b*exp(c + d*x))**(n + 1)/(b*d*(n + 1))
```

Mathematica [A] time = 0.0299418, size = 26, normalized size = 0.96

$$\frac{\left(a + b e^{c+dx}\right)^{n+1}}{bdn + bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(c + d*x)*(a + b*E^(c + d*x))^n,x]
```

```
[Out] (a + b*E^(c + d*x))^(1 + n)/(b*d + b*d*n)
```

Maple [A] time = 0.003, size = 27, normalized size = 1.

$$\frac{\left(a + b e^{dx+c}\right)^{1+n}}{bd\,(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(d*x+c)*(a+b*exp(d*x+c))^n,x)
```

```
[Out] (a+b*exp(d*x+c))^(1+n)/b/d/(1+n)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*e^(d*x + c) + a)^n*e^(d*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.246774, size = 45, normalized size = 1.67

$$\frac{\left(be^{(dx+c)} + a\right)\left(be^{(dx+c)} + a\right)^n}{bdn + bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*e^(d*x + c) + a)^n*e^(d*x + c),x, algorithm="fricas")
```

```
[Out] (b*e^(d*x + c) + a)*(b*e^(d*x + c) + a)^n/(b*d*n + b*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(d*x+c)*(a+b*exp(d*x+c))**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.227236, size = 35, normalized size = 1.3

$$\frac{\left(be^{(dx+c)} + a\right)^{n+1}}{bd(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*e^(d*x + c) + a)^n*e^(d*x + c),x, algorithm="giac")
```

```
[Out] (b*e^(d*x + c) + a)^(n + 1)/(b*d*(n + 1))
```

3.8 $\int \frac{F^x}{a+bF^x} \, dx$

Optimal. Leaf size=16

$$\frac{\log(a+bF^x)}{b\log(F)}$$

```
[Out] Log[a + b*F^x]/(b*Log[F])
```

Rubi [A] time = 0.0358685, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{\log(a+bF^x)}{b\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^x/(a + b*F^x),x]

[Out] Log[a + b*F^x]/(b*Log[F])
```

Rubi in Sympy [A] time = 11.105, size = 12, normalized size = 0.75

$$\frac{\log(F^x b + a)}{b\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**x/(a+b*F**x),x)

[Out] log(F**x*b + a)/(b*log(F))
```

Mathematica [A] time = 0.0045716, size = 16, normalized size = 1.

$$\frac{\log(a+bF^x)}{b\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^x/(a + b*F^x),x]

[Out] Log[a + b*F^x]/(b*Log[F])
```

Maple [A] time = 0.003, size = 17, normalized size = 1.1

$$\frac{\ln(a+bF^x)}{b\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^x/(a+b*F^x),x)
```

```
[Out] ln(a+b*F^x)/b/ln(F)
```

Maxima [A] time = 0.86913, size = 22, normalized size = 1.38

$$\frac{\log\left(F^x b + a\right)}{b\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^x/(F^x*b + a),x, algorithm="maxima")

[Out] log(F^x*b + a)/(b*log(F))
```

Fricas [A] time = 0.2675, size = 22, normalized size = 1.38

$$\frac{\log\left(F^x b + a\right)}{b\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^x/(F^x*b + a),x, algorithm="fricas")

[Out] log(F^x*b + a)/(b*log(F))
```

Sympy [A] time = 0.243275, size = 12, normalized size = 0.75

$$\frac{\log\left(F^x + \frac{a}{b}\right)}{b\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**x/(a+b*F**x),x)

[Out] log(F**x + a/b)/(b*log(F))
```

GIAC/XCAS [A] time = 0.233287, size = 23, normalized size = 1.44

$$\frac{\ln\left(|F^x b + a|\right)}{b\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^x/(F^x*b + a),x, algorithm="giac")

[Out] ln(abs(F^x*b + a))/(b*ln(F))
```

3.9 $\int \frac{F^{dx}}{a+bF^{c+dx}}\,dx$

Optimal. Leaf size=28

$$\frac{F^{-c}\log\left(a+bF^{c+dx}\right)}{bd\log(F)}$$

```
[Out] Log[a + b*F^(c + d*x)]/(b*d*F^c*Log[F])
```

Rubi [A] time = 0.112887, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{F^{-c}\log\left(a+bF^{c+dx}\right)}{bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(d*x)/(a + b*F^(c + d*x)),x]

[Out] Log[a + b*F^(c + d*x)]/(b*d*F^c*Log[F])
```

Rubi in Sympy [A] time = 13.347, size = 20, normalized size = 0.71

$$\frac{F^{-c}\log\left(F^{c+dx}b+a\right)}{bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(d*x)/(a+b*F**(d*x+c)),x)

[Out] F**(-c)*log(F**(c + d*x)*b + a)/(b*d*log(F))
```

Mathematica [A] time = 0.00792758, size = 28, normalized size = 1.

$$\frac{F^{-c}\log\left(a+bF^{c+dx}\right)}{bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(d*x)/(a + b*F^(c + d*x)),x]

[Out] Log[a + b*F^(c + d*x)]/(b*d*F^c*Log[F])
```

Maple [A] time = 0.016, size = 33, normalized size = 1.2

$$\frac{\ln\left(a+be^{c\ln(F)}e^{d\ln(F)x}\right)}{F^{c}b\ln\left(F\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(d*x)/(a+b*F^(d*x+c)),x)
```

```
[Out] 1/(F^c)/b/ln(F)/d*ln(a+b*exp(c*ln(F))*exp(d*ln(F)*x))
```

Maxima [A] time = 0.965649, size = 38, normalized size = 1.36

$$\frac{\log\left(F^{dx+c}b+a\right)}{F^{c}bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(d*x)/(F^(d*x + c)*b + a),x, algorithm="maxima")
```

```
[Out] log(F^(d*x + c)*b + a)/(F^c*b*d*log(F))
```

Fricas [A] time = 0.282102, size = 38, normalized size = 1.36

$$\frac{\log\left(F^{dx+c}b+a\right)}{F^{c}bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(d*x)/(F^(d*x + c)*b + a),x, algorithm="fricas")
```

```
[Out] log(F^(d*x + c)*b + a)/(F^c*b*d*log(F))
```

Sympy [A] time = 1.33169, size = 24, normalized size = 0.86

$$\frac{e^{-c\log\left(F\right)}\log\left(F^{c+dx}+\frac{a}{b}\right)}{bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(d*x)/(a+b*F**(d*x+c)),x)
```

```
[Out] exp(-c*log(F))*log(F**(c + d*x) + a/b)/(b*d*log(F))
```

GIAC/XCAS [A] time = 0.227087, size = 41, normalized size = 1.46

$$\frac{\ln\left(\left|F^{dx}F^{c}b+a\right|\right)}{F^{c}bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(d*x)/(F^(d*x + c)*b + a),x, algorithm="giac")
```

```
[Out] ln(abs(F^(d*x)*F^c*b + a))/(F^c*b*d*ln(F))
```

3.10 $\int \frac{F^{c+dx}}{a+bF^{c+dx}}\,dx$

Optimal. Leaf size=23

$$\frac{\log\left(a+bF^{c+dx}\right)}{bd\log(F)}$$

```
[Out] Log[a + b*F^(c + d*x)]/(b*d*Log[F])
```

Rubi [A] time = 0.058602, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{\log\left(a+bF^{c+dx}\right)}{bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(c + d*x)/(a + b*F^(c + d*x)),x]
```

```
[Out] Log[a + b*F^(c + d*x)]/(b*d*Log[F])
```

Rubi in Sympy [A] time = 13.2654, size = 17, normalized size = 0.74

$$\frac{\log\left(F^{c+dx}b+a\right)}{bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(d*x+c)/(a+b*F**(d*x+c)),x)
```

```
[Out] log(F**(c + d*x)*b + a)/(b*d*log(F))
```

Mathematica [A] time = 0.00436809, size = 23, normalized size = 1.

$$\frac{\log\left(a+bF^{c+dx}\right)}{bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(c + d*x)/(a + b*F^(c + d*x)),x]
```

```
[Out] Log[a + b*F^(c + d*x)]/(b*d*Log[F])
```

Maple [A] time = 0.001, size = 24, normalized size = 1.

$$\frac{\ln\left(a+bF^{dx+c}\right)}{bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(d*x+c)/(a+b*F^(d*x+c)),x)
```

```
[Out] ln(a+b*F^(d*x+c))/b/d/ln(F)
```

Maxima [A] time = 0.894212, size = 31, normalized size = 1.35

$$\frac{\log\left(F^{dx+c}b+a\right)}{bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(d*x + c)/(F^(d*x + c)*b + a),x, algorithm="maxima")
```

```
[Out] log(F^(d*x + c)*b + a)/(b*d*log(F))
```

Fricas [A] time = 0.264127, size = 31, normalized size = 1.35

$$\frac{\log\left(F^{dx+c}b+a\right)}{bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(d*x + c)/(F^(d*x + c)*b + a),x, algorithm="fricas")
```

```
[Out] log(F^(d*x + c)*b + a)/(b*d*log(F))
```

Sympy [A] time = 0.286942, size = 17, normalized size = 0.74

$$\frac{\log\left(F^{c+dx}+\frac{a}{b}\right)}{bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(d*x+c)/(a+b*F**(d*x+c)),x)
```

```
[Out] log(F**(c + d*x) + a/b)/(b*d*log(F))
```

GIAC/XCAS [A] time = 0.221588, size = 32, normalized size = 1.39

$$\frac{\ln\left(\left|F^{dx+c}b+a\right|\right)}{bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(d*x + c)/(F^(d*x + c)*b + a),x, algorithm="giac")
```

```
[Out] ln(abs(F^(d*x + c)*b + a))/(b*d*ln(F))
```

3.11 $\int F^x (a + bF^x)^n \, dx$

Optimal. Leaf size=24

$$\frac{(a + bF^x)^{n+1}}{b(n + 1)\log(F)}$$

```
[Out] (a + b*F^x)^(1 + n)/(b*(1 + n)*Log[F])
```

Rubi [A] time = 0.0412352, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{(a + bF^x)^{n+1}}{b(n + 1)\log(F)}$$

Antiderivative was successfully verified.

```
[In] Int[F^x*(a + b*F^x)^n,x]
```

```
[Out] (a + b*F^x)^(1 + n)/(b*(1 + n)*Log[F])
```

Rubi in Sympy [A] time = 7.52526, size = 17, normalized size = 0.71

$$\frac{(F^x b + a)^{n+1}}{b\,(n + 1)\log\,(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**x*(a+b*F**x)**n,x)
```

```
[Out] (F**x*b + a)**(n + 1)/(b*(n + 1)*log(F))
```

Mathematica [A] time = 0.0276606, size = 24, normalized size = 1.

$$\frac{(a + bF^x)^{n+1}}{bn\log(F) + b\log(F)}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^x*(a + b*F^x)^n,x]
```

```
[Out] (a + b*F^x)^(1 + n)/(b*Log[F] + b*n*Log[F])
```

Maple [A] time = 0.003, size = 25, normalized size = 1.

$$\frac{(a + bF^x)^{1+n}}{b\,(1 + n)\ln\,(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(F^x*(a+b*F^x)^n,x)
```

```
[Out] (a+b*F^x)^(1+n)/b/(1+n)/ln(F)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^x*b + a)^n*F^x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.313717, size = 38, normalized size = 1.58

$$\frac{(F^x b + a)(F^x b + a)^n}{(bn + b)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^x*b + a)^n*F^x,x, algorithm="fricas")
```

```
[Out] (F^x*b + a)*(F^x*b + a)^n/((b*n + b)*log(F))
```

Sympy [A] time = 3.75109, size = 82, normalized size = 3.42

$$\begin{cases} \frac{x}{a} & \text{for}\: F = 1 \wedge b = 0 \wedge n = -1 \\ x\left(a + b\right)^{n} & \text{for}\: F = 1 \\ \frac{F^{x} a^{n}}{\log(F)} & \text{for}\: b = 0 \\ \frac{\log\left(F^{x} + \frac{a}{b}\right)}{b\log(F)} & \text{for}\: n = -1 \\ \frac{F^{x} b (F^{x} b + a)^{n}}{bn\log(F) + b\log(F)} + \frac{a(F^{x} b + a)^{n}}{bn\log(F) + b\log(F)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F**x*(a+b*F**x)**n,x)
```

```
[Out] Piecewise((x/a, Eq(F, 1) & Eq(b, 0) & Eq(n, -1)), (x*(a + b)**n,
Eq(F, 1)), (F**x*a**n/log(F), Eq(b, 0)), (log(F**x + a/b)/(b*log(
F)), Eq(n, -1)), (F**x*b*(F**x*b + a)**n/(b*n*log(F) + b*log(F))
+ a*(F**x*b + a)**n/(b*n*log(F) + b*log(F)), True))
```

GIAC/XCAS [A] time = 0.227888, size = 32, normalized size = 1.33

$$\frac{(F^x b + a)^{n+1}}{b(n + 1)\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^x*b + a)^n*F^x,x, algorithm="giac")
```

```
[Out] (F^x*b + a)^(n + 1)/(b*(n + 1)*ln(F))
```

3.12 $\int F^{dx}\left(a+bF^{c+dx}\right)^n\,dx$

Optimal. Leaf size=36

$$\frac{F^{-c}\left(a+bF^{c+dx}\right)^{n+1}}{bd(n+1)\log(F)}$$

```
[Out] (a + b*F^(c + d*x))^(1 + n)/(b*d*F^c*(1 + n)*Log[F])
```

Rubi [A] time = 0.122426, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{F^{-c}\left(a+bF^{c+dx}\right)^{n+1}}{bd(n+1)\log(F)}$$

Antiderivative was successfully verified.

```
[In] Int[F^(d*x)*(a + b*F^(c + d*x))^n,x]
```

```
[Out] (a + b*F^(c + d*x))^(1 + n)/(b*d*F^c*(1 + n)*Log[F])
```

Rubi in Sympy [A] time = 9.56589, size = 26, normalized size = 0.72

$$\frac{F^{-c}\left(F^{c+dx}b+a\right)^{n+1}}{bd\left(n+1\right)\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(d*x)*(a+b*F**(d*x+c))**n,x)
```

```
[Out] F**(-c)*(F**(c + d*x)*b + a)**(n + 1)/(b*d*(n + 1)*log(F))
```

Mathematica [A] time = 0.0557343, size = 35, normalized size = 0.97

$$\frac{F^{-c}\left(a+bF^{c+dx}\right)^{n+1}}{bdn\log(F)+bd\log(F)}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(d*x)*(a + b*F^(c + d*x))^n,x]
```

```
[Out] (a + b*F^(c + d*x))^(1 + n)/(F^c*(b*d*Log[F] + b*d*n*Log[F]))
```

Maple [B] time = 0.034, size = 81, normalized size = 2.3

$$\frac{e^{d\ln(F)x}e^{n\ln\left(a+be^{c\ln(F)}e^{d\ln(F)x}\right)}}{d\ln\left(F\right)\left(1+n\right)}+\frac{ae^{n\ln\left(a+be^{c\ln(F)}e^{d\ln(F)x}\right)}}{F^{c}\ln\left(F\right)bd\left(1+n\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(d*x)*(a+b*F^(d*x+c))^n,x)
```

```
[Out] 1/ln(F)/d/(1+n)*exp(d*ln(F)*x)*exp(n*ln(a+b*exp(c*ln(F))*exp(d*ln
(F)*x)))+1/b/(F^c)/d/ln(F)/(1+n)*a*exp(n*ln(a+b*exp(c*ln(F))*exp(
d*ln(F)*x)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*b + a)^n*F^(d*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.265468, size = 68, normalized size = 1.89

$$\frac{\left(F^{dx+c}b+a\right)^{n}\left(\frac{F^{dx+c}b}{F^{c}}+\frac{a}{F^{c}}\right)}{(bdn+bd)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*b + a)^n*F^(d*x),x, algorithm="fricas")
```

```
[Out] (F^(d*x + c)*b + a)^n*(F^(d*x + c)*b/F^c + a/F^c)/((b*d*n + b*d)*
log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(d*x)*(a+b*F**(d*x+c))**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\left(F^{dx+c}b+a\right)^{n}F^{dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*b + a)^n*F^(d*x),x, algorithm="giac")
```

```
[Out] integrate((F^(d*x + c)*b + a)^n*F^(d*x), x)
```

3.13 $\int F^{c+dx}\left(a+bF^{c+dx}\right)^n\,dx$

Optimal. Leaf size=31

$$\frac{\left(a+bF^{c+dx}\right)^{n+1}}{bd(n+1)\log(F)}$$

```
[Out] (a + b*F^(c + d*x))^(1 + n)/(b*d*(1 + n)*Log[F])
```

Rubi [A] time = 0.0627803, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{\left(a+bF^{c+dx}\right)^{n+1}}{bd(n+1)\log(F)}$$

Antiderivative was successfully verified.

```
[In] Int[F^(c + d*x)*(a + b*F^(c + d*x))^n,x]
```

```
[Out] (a + b*F^(c + d*x))^(1 + n)/(b*d*(1 + n)*Log[F])
```

Rubi in Sympy [A] time = 9.23108, size = 22, normalized size = 0.71

$$\frac{\left(F^{c+dx}b+a\right)^{n+1}}{bd\left(n+1\right)\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(d*x+c)*(a+b*F**(d*x+c))**n,x)
```

```
[Out] (F**(c + d*x)*b + a)**(n + 1)/(b*d*(n + 1)*log(F))
```

Mathematica [A] time = 0.0393691, size = 30, normalized size = 0.97

$$\frac{\left(a+bF^{c+dx}\right)^{n+1}}{bdn\log(F)+bd\log(F)}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(c + d*x)*(a + b*F^(c + d*x))^n,x]
```

```
[Out] (a + b*F^(c + d*x))^(1 + n)/(b*d*Log[F] + b*d*n*Log[F])
```

Maple [A] time = 0.003, size = 32, normalized size = 1.

$$\frac{\left(a+bF^{dx+c}\right)^{1+n}}{bd\left(1+n\right)\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(d*x+c)*(a+b*F^(d*x+c))^n,x)

[Out] (a+b*F^(d*x+c))^(1+n)/b/d/(1+n)/ln(F)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*b + a)^n*F^(d*x + c),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.249196, size = 53, normalized size = 1.71

$$\frac{\left(F^{dx+c}b+a\right)\left(F^{dx+c}b+a\right)^{n}}{(bdn+bd)\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*b + a)^n*F^(d*x + c),x, algorithm="fricas")

[Out] (F^(d*x + c)*b + a)*(F^(d*x + c)*b + a)^n/((b*d*n + b*d)*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(d*x+c)*(a+b*F**(d*x+c))**n,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.228053, size = 42, normalized size = 1.35

$$\frac{\left(F^{dx+c}b+a\right)^{n+1}}{bd(n+1)\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*b + a)^n*F^(d*x + c),x, algorithm="giac")

[Out] (F^(d*x + c)*b + a)^(n + 1)/(b*d*(n + 1)*ln(F))
```

3.14 $\int (e^x)^n (a + b (e^x)^n)^p \, dx$

Optimal. Leaf size=25

$$\frac{(a + b (e^x)^n)^{p+1}}{bn(p + 1)}$$

```
[Out] (a + b*(E^x)^n)^(1 + p)/(b*n*(1 + p))
```

Rubi [A] time = 0.0651789, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{(a + b (e^x)^n)^{p+1}}{bn(p + 1)}$$

Antiderivative was successfully verified.

```
[In] Int[(E^x)^n*(a + b*(E^x)^n)^p,x]
```

```
[Out] (a + b*(E^x)^n)^(1 + p)/(b*n*(1 + p))
```

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

$$(e^x)^n e^{-nx} \int \left(a + b (e^x)^n\right)^p e^{nx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)**n*(a+b*exp(x)**n)**p,x)
```

```
[Out] exp(x)**n*exp(-n*x)*Integral((a + b*exp(x)**n)**p*exp(n*x), x)
```

Mathematica [A] time = 0.0635137, size = 24, normalized size = 0.96

$$\frac{(a + b (e^x)^n)^{p+1}}{bnp + bn}$$

Antiderivative was successfully verified.

```
[In] Integrate[(E^x)^n*(a + b*(E^x)^n)^p,x]
```

```
[Out] (a + b*(E^x)^n)^(1 + p)/(b*n + b*n*p)
```

Maple [A] time = 0.004, size = 25, normalized size = 1.

$$\frac{(a + b (e^x)^n)^{1+p}}{bn (1 + p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)^n*(a+b*exp(x)^n)^p,x)
```

```
[Out] (a+b*exp(x)^n)^(1+p)/b/n/(1+p)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*(e^x)^n + a)^p*(e^x)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.317473, size = 39, normalized size = 1.56

$$\frac{\left(be^{(nx)} + a\right)\left(be^{(nx)} + a\right)^{p}}{bnp + bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*(e^x)^n + a)^p*(e^x)^n,x, algorithm="fricas")
```

```
[Out] (b*e^(n*x) + a)*(b*e^(n*x) + a)^p/(b*n*p + b*n)
```

Sympy [A] time = 7.35802, size = 80, normalized size = 3.2

$$\begin{cases} \frac{x}{a} & \text{for}\: b = 0 \wedge n = 0 \wedge p = -1 \\ \frac{a^{p} (e^{x})^{n}}{n} & \text{for}\: b = 0 \\ x \left(a + b\right)^{p} & \text{for}\: n = 0 \\ \frac{\log{\left(\frac{a}{b} + (e^{x})^{n} \right)}}{bn} & \text{for}\: p = -1 \\ \frac{a(a + b(e^{x})^{n})^{p}}{bnp + bn} + \frac{b(a + b(e^{x})^{n})^{p} (e^{x})^{n}}{bnp + bn} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x)**n*(a+b*exp(x)**n)**p,x)
```

```
[Out] Piecewise((x/a, Eq(b, 0) & Eq(n, 0) & Eq(p, -1)), (a**p*exp(x)**n
/n, Eq(b, 0)), (x*(a + b)**p, Eq(n, 0)), (log(a/b + exp(x)**n)/(b
*n), Eq(p, -1)), (a*(a + b*exp(x)**n)**p/(b*n*p + b*n) + b*(a + b
*exp(x)**n)**p*exp(x)**n/(b*n*p + b*n), True))
```

GIAC/XCAS [A] time = 0.227308, size = 32, normalized size = 1.28

$$\frac{\left(be^{(nx)} + a\right)^{p+1}}{bn(p + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*(e^x)^n + a)^p*(e^x)^n,x, algorithm="giac")
```

```
[Out] (b*e^(n*x) + a)^(p + 1)/(b*n*(p + 1))
```

3.15 $\int e^{nx}\left(a+b\left(e^x\right)^n\right)^p\,dx$

Optimal. Leaf size=37

$$\frac{e^{nx}\left(e^x\right)^{-n}\left(a+b\left(e^x\right)^n\right)^{p+1}}{bn(p+1)}$$

```
[Out] (E^(n*x)*(a + b*(E^x)^n)^(1 + p))/(b*(E^x)^n*n*(1 + p))
```

Rubi [A] time = 0.0962298, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{e^{nx}\left(e^x\right)^{-n}\left(a+b\left(e^x\right)^n\right)^{p+1}}{bn(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[E^(n*x)*(a + b*(E^x)^n)^p,x]
```

```
[Out] (E^(n*x)*(a + b*(E^x)^n)^(1 + p))/(b*(E^x)^n*n*(1 + p))
```

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

$$\int\left(a+b\left(e^x\right)^n\right)^p e^{nx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(n*x)*(a+b*exp(x)**n)**p,x)
```

```
[Out] Integral((a + b*exp(x)**n)**p*exp(n*x), x)
```

Mathematica [A] time = 0.0490684, size = 36, normalized size = 0.97

$$\frac{e^{nx}\left(e^x\right)^{-n}\left(a+b\left(e^x\right)^n\right)^{p+1}}{bnp+bn}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(n*x)*(a + b*(E^x)^n)^p,x]
```

```
[Out] (E^(n*x)*(a + b*(E^x)^n)^(1 + p))/((E^x)^n*(b*n + b*n*p))
```

Maple [A] time = 0.022, size = 52, normalized size = 1.4

$$\frac{e^{nx}e^{p\ln(a+be^{nx})}}{n(1+p)}+\frac{ae^{p\ln(a+be^{nx})}}{bn(1+p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(n*x)*(a+b*exp(x)^n)^p,x)
```

```
[Out] 1/n/(1+p)*exp(n*x)*exp(p*ln(a+b*exp(n*x)))+a/b/n/(1+p)*exp(p*ln(a
+b*exp(n*x)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*(e^x)^n + a)^p*e^(n*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.261072, size = 39, normalized size = 1.05

$$\frac{\left(be^{(nx)} + a\right)\left(be^{(nx)} + a\right)^{p}}{bnp + bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*(e^x)^n + a)^p*e^(n*x),x, algorithm="fricas")
```

```
[Out] (b*e^(n*x) + a)*(b*e^(n*x) + a)^p/(b*n*p + b*n)
```

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

$$\int \left(a + b\left(e^{x}\right)^{n}\right)^{p} e^{nx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(n*x)*(a+b*exp(x)**n)**p,x)
```

```
[Out] Integral((a + b*exp(x)**n)**p*exp(n*x), x)
```

GIAC/XCAS [A] time = 0.231309, size = 32, normalized size = 0.86

$$\frac{\left(be^{(nx)} + a\right)^{p+1}}{bn(p + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*(e^x)^n + a)^p*e^(n*x),x, algorithm="giac")
```

```
[Out] (b*e^(n*x) + a)^(p + 1)/(b*n*(p + 1))
```

3.16 $\int \left(F^{e(c+dx)}\right)^n \left(a+b\left(F^{e(c+dx)}\right)^n\right)^p\,dx$

Optimal. Leaf size=41

$$\frac{\left(a+b\left(F^{e(c+dx)}\right)^n\right)^{p+1}}{bden(p+1)\log(F)}$$

```
[Out] (a + b*(F^(e*(c + d*x)))^n)^(1 + p)/(b*d*e*n*(1 + p)*Log[F])
```

Rubi [A] time = 0.115201, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$

$$\frac{\left(a+b\left(F^{e(c+dx)}\right)^n\right)^{p+1}}{bden(p+1)\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[(F^(e*(c + d*x)))^n*(a + b*(F^(e*(c + d*x)))^n)^p,x]

[Out] (a + b*(F^(e*(c + d*x)))^n)^(1 + p)/(b*d*e*n*(1 + p)*Log[F])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((F**(e*(d*x+c)))**n*(a+b*(F**(e*(d*x+c)))**n)**p,x)

[Out] Timed out
```

Mathematica [A] time = 0.304654, size = 0, normalized size = 0.

$$\int \left(F^{e(c+dx)}\right)^n \left(a+b\left(F^{e(c+dx)}\right)^n\right)^p\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(F^(e*(c + d*x)))^n*(a + b*(F^(e*(c + d*x)))^n)^p,x]

[Out] Integrate[(F^(e*(c + d*x)))^n*(a + b*(F^(e*(c + d*x)))^n)^p, x]
```

Maple [A] time = 0.013, size = 42, normalized size = 1.

$$\frac{\left(a+b\left(F^{e(dx+c)}\right)^n\right)^{1+p}}{bden\,(1+p)\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((F^(e*(d*x+c)))^n*(a+b*(F^(e*(d*x+c)))^n)^p,x)
```

```
[Out] (a+b*(F^(e*(d*x+c)))^n)^(1+p)/b/d/e/n/(1+p)/ln(F)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((F^((d*x + c)*e))^n*b + a)^p*(F^((d*x + c)*e))^n,x, algorithm="maxima
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.252022, size = 72, normalized size = 1.76

$$\frac{\left(F^{denx+cen}b + a\right)\left(F^{denx+cen}b + a\right)^{p}}{(bdenp + bden)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((F^((d*x + c)*e))^n*b + a)^p*(F^((d*x + c)*e))^n,x, algorithm="fricas
```

```
[Out] (F^(d*e*n*x + c*e*n)*b + a)*(F^(d*e*n*x + c*e*n)*b + a)^p/((b*d*e
*n*p + b*d*e*n)*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F**(e*(d*x+c)))**n*(a+b*(F**(e*(d*x+c)))**n)**p,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.245405, size = 58, normalized size = 1.41

$$\frac{\left(F^{dnxe+cne}b + a\right)^{p+1}e^{(-1)}}{bdn(p+1)\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((F^((d*x + c)*e))^n*b + a)^p*(F^((d*x + c)*e))^n,x, algorithm="giac")
```

```
[Out] (F^(d*n*x*e + c*n*e)*b + a)^(p + 1)*e^(-1)/(b*d*n*(p + 1)*ln(F))
```

3.17 $\int \left(a+b\left(F^{e(c+dx)}\right)^n\right)^p \left(G^{h(f+gx)}\right)^{\frac{den\log(F)}{gh\log(G)}}\,dx$

Optimal. Leaf size=80

$$\frac{\left(F^{e(c+dx)}\right)^{-n}\left(a+b\left(F^{e(c+dx)}\right)^n\right)^{p+1}\left(G^{h(f+gx)}\right)^{\frac{den\log(F)}{gh\log(G)}}}{bden(p+1)\log(F)}$$

```
[Out] ((a + b*(F^(e*(c + d*x)))^n)^(1 + p)*(G^(h*(f + g*x)))^((d*e*n*Lo
g[F])/(g*h*Log[G])))/(b*d*e*(F^(e*(c + d*x)))^n*n*(1 + p)*Log[F])
```

Rubi [A] time = 0.231639, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068

$$\frac{\left(F^{e(c+dx)}\right)^{-n}\left(a+b\left(F^{e(c+dx)}\right)^n\right)^{p+1}\left(G^{h(f+gx)}\right)^{\frac{den\log(F)}{gh\log(G)}}}{bden(p+1)\log(F)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*(F^(e*(c + d*x)))^n)^p*(G^(h*(f + g*x)))^((d*e*n*Log[F])/(g*h*Log[G])
```

```
[Out] ((a + b*(F^(e*(c + d*x)))^n)^(1 + p)*(G^(h*(f + g*x)))^((d*e*n*Lo
g[F])/(g*h*Log[G])))/(b*d*e*(F^(e*(c + d*x)))^n*n*(1 + p)*Log[F])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*(F**(e*(d*x+c)))**n)**p*(G**(h*(g*x+f)))**(d*e*n*ln(F)/g/h
```

```
[Out] Timed out
```

Mathematica [A] time = 0.280123, size = 0, normalized size = 0.

$$\int \left(a+b\left(F^{e(c+dx)}\right)^n\right)^p \left(G^{h(f+gx)}\right)^{\frac{den\log(F)}{gh\log(G)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*(F^(e*(c + d*x)))^n)^p*(G^(h*(f + g*x)))^((d*e*n*Log[F])/(g*h*L
```

```
[Out] Integrate[(a + b*(F^(e*(c + d*x)))^n)^p*(G^(h*(f + g*x)))^((d*e*n
*Log[F])/(g*h*Log[G])), x]
```

Maple [F] time = 1.185, size = 0, normalized size = 0.

$$\int \left(a+b\left(F^{e(dx+c)}\right)^n\right)^p \left(G^{h(gx+f)}\right)^{\frac{nde\ln(F)}{gh\ln(G)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*(F^(e*(d*x+c)))^n)^p*(G^(h*(g*x+f)))^(d*e*n*ln(F)/g/h/ln(G)),x)
```

```
[Out] int((a+b*(F^(e*(d*x+c)))^n)^p*(G^(h*(g*x+f)))^(d*e*n*ln(F)/g/h/ln
(G)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(\left(F^{(dx+c)e}\right)^n b + a\right)^p \left(G^{(gx+f)h}\right)^{\frac{den \log(F)}{gh \log(G)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((F^((d*x + c)*e))^n*b + a)^p*(G^((g*x + f)*h))^(d*e*n*log(F)/(g*h*log
```

```
[Out] integrate(((F^((d*x + c)*e))^n*b + a)^p*(G^((g*x + f)*h))^(d*e*n*
log(F)/(g*h*log(G))), x)
```

Fricas [A] time = 0.30548, size = 119, normalized size = 1.49

$$\frac{\left(F^{denx+cen}F^{\frac{(def-ceg)n}{g}}b + F^{\frac{(def-ceg)n}{g}}a\right)\left(F^{denx+cen}b + a\right)^p}{(bdenp + bden)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((F^((d*x + c)*e))^n*b + a)^p*(G^((g*x + f)*h))^(d*e*n*log(F)/(g*h*log
```

```
[Out] (F^(d*e*n*x + c*e*n)*F^((d*e*f - c*e*g)*n/g)*b + F^((d*e*f - c*e*
g)*n/g)*a)*(F^(d*e*n*x + c*e*n)*b + a)^p/((b*d*e*n*p + b*d*e*n)*l
og(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*(F**(e*(d*x+c)))**n)**p*(G**(h*(g*x+f)))**(d*e*n*ln(F)/g/h/ln(G
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(\left(F^{(dx+c)e}\right)^n b + a\right)^p \left(G^{(gx+f)h}\right)^{\frac{den \log(F)}{gh \log(G)}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((F^((d*x + c)*e))^n*b + a)^p*(G^((g*x + f)*h))^(d*e*n*log(F)/(g*h*log
```

```
[Out] integrate(((F^((d*x + c)*e))^n*b + a)^p*(G^((g*x + f)*h))^(d*e*n*
log(F)/(g*h*log(G))), x)
```

3.18 $\int \frac{e^{2x}}{a+be^x} \, dx$

Optimal. Leaf size=22

$$\frac{e^x}{b} - \frac{a \log(a + be^x)}{b^2}$$

```
[Out] E^x/b - (a*Log[a + b*E^x])/b^2
```

Rubi [A] time = 0.054025, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{e^x}{b} - \frac{a \log(a + be^x)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(a + b*E^x),x]

[Out] E^x/b - (a*Log[a + b*E^x])/b^2
```

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

$$-\frac{a \log(a + be^x)}{b^2} + \int^{e^x} \frac{1}{b} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(a+b*exp(x)),x)

[Out] -a*log(a + b*exp(x))/b**2 + Integral(1/b, (x, exp(x)))
```

Mathematica [A] time = 0.0113405, size = 22, normalized size = 1.

$$\frac{e^x}{b} - \frac{a \log(a + be^x)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(a + b*E^x),x]

[Out] E^x/b - (a*Log[a + b*E^x])/b^2
```

Maple [A] time = 0.006, size = 21, normalized size = 1.

$$\frac{e^x}{b} - \frac{a \ln(a + be^x)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(a+b*exp(x)),x)
```

```
[Out] exp(x)/b-a*ln(a+b*exp(x))/b^2
```

Maxima [A] time = 0.766471, size = 27, normalized size = 1.23

$$\frac{e^x}{b} - \frac{a \log(be^x + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a),x, algorithm="maxima")
```

```
[Out] e^x/b - a*log(b*e^x + a)/b^2
```

Fricas [A] time = 0.245301, size = 26, normalized size = 1.18

$$\frac{be^x - a \log(be^x + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a),x, algorithm="fricas")
```

```
[Out] (b*e^x - a*log(b*e^x + a))/b^2
```

Sympy [A] time = 0.258955, size = 20, normalized size = 0.91

$$-\frac{a \log\left(\frac{a}{b} + e^x\right)}{b^2} + \begin{cases} \frac{e^x}{b} & \text{for}\ b \neq 0 \\ \frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(a+b*exp(x)),x)
```

```
[Out] -a*log(a/b + exp(x))/b**2 + Piecewise((exp(x)/b, Ne(b, 0)), (x/b,
 True))
```

GIAC/XCAS [A] time = 0.230413, size = 28, normalized size = 1.27

$$\frac{e^x}{b} - \frac{a \ln(|be^x + a|)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a),x, algorithm="giac")
```

```
[Out] e^x/b - a*ln(abs(b*e^x + a))/b^2
```

3.19 $\int \frac{e^{2x}}{(a+be^x)^2}\,dx$

Optimal. Leaf size=27

$$\frac{a}{b^2\left(a+be^x\right)}+\frac{\log\left(a+be^x\right)}{b^2}$$

```
[Out] a/(b^2*(a + b*E^x)) + Log[a + b*E^x]/b^2
```

Rubi [A] time = 0.0604489, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{a}{b^2\left(a+be^x\right)}+\frac{\log\left(a+be^x\right)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(a + b*E^x)^2,x]
```

```
[Out] a/(b^2*(a + b*E^x)) + Log[a + b*E^x]/b^2
```

Rubi in Sympy [A] time = 10.0582, size = 22, normalized size = 0.81

$$\frac{a}{b^2\left(a+be^x\right)}+\frac{\log\left(a+be^x\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(a+b*exp(x))**2,x)
```

```
[Out] a/(b**2*(a + b*exp(x))) + log(a + b*exp(x))/b**2
```

Mathematica [A] time = 0.0230116, size = 24, normalized size = 0.89

$$\frac{\frac{a}{a+be^x}+\log\left(a+be^x\right)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(a + b*E^x)^2,x]
```

```
[Out] (a/(a + b*E^x) + Log[a + b*E^x])/b^2
```

Maple [A] time = 0.01, size = 26, normalized size = 1.

$$\frac{a}{b^2\left(a+be^x\right)}+\frac{\ln\left(a+be^x\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(a+b*exp(x))^2,x)
```

```
[Out] a/b^2/(a+b*exp(x))+ln(a+b*exp(x))/b^2
```

Maxima [A] time = 0.777959, size = 38, normalized size = 1.41

$$\frac{a}{b^3e^x + ab^2} + \frac{\log(be^x + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a)^2,x, algorithm="maxima")
```

```
[Out] a/(b^3*e^x + a*b^2) + log(b*e^x + a)/b^2
```

Fricas [A] time = 0.257842, size = 42, normalized size = 1.56

$$\frac{(be^x + a)\log(be^x + a) + a}{b^3e^x + ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a)^2,x, algorithm="fricas")
```

```
[Out] ((b*e^x + a)*log(b*e^x + a) + a)/(b^3*e^x + a*b^2)
```

Sympy [A] time = 0.273961, size = 24, normalized size = 0.89

$$\frac{a}{ab^2 + b^3e^x} + \frac{\log\left(\frac{a}{b} + e^x\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(a+b*exp(x))**2,x)
```

```
[Out] a/(a*b**2 + b**3*exp(x)) + log(a/b + exp(x))/b**2
```

GIAC/XCAS [A] time = 0.254986, size = 35, normalized size = 1.3

$$\frac{\ln(|be^x + a|)}{b^2} + \frac{a}{(be^x + a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a)^2,x, algorithm="giac")
```

```
[Out] ln(abs(b*e^x + a))/b^2 + a/((b*e^x + a)*b^2)
```

3.20 $\int \frac{e^{2x}}{(a+be^x)^3}\,dx$

Optimal. Leaf size=21

$$\frac{e^{2x}}{2a\,(a+be^x)^2}$$

```
[Out] E^(2*x)/(2*a*(a + b*E^x)^2)
```

Rubi [A] time = 0.0408097, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{e^{2x}}{2a\,(a+be^x)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(a + b*E^x)^3,x]

[Out] E^(2*x)/(2*a*(a + b*E^x)^2)
```

Rubi in Sympy [A] time = 6.89898, size = 15, normalized size = 0.71

$$\frac{e^{2x}}{2a\,(a+be^x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(a+b*exp(x))**3,x)

[Out] exp(2*x)/(2*a*(a + b*exp(x))**2)
```

Mathematica [A] time = 0.0156651, size = 24, normalized size = 1.14

$$-\frac{a+2be^x}{2b^2\,(a+be^x)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(a + b*E^x)^3,x]

[Out] -(a + 2*b*E^x)/(2*b^2*(a + b*E^x)^2)
```

Maple [A] time = 0.01, size = 29, normalized size = 1.4

$$\frac{a}{2\,b^2\,(a+be^x)^2}-\frac{1}{b^2\,(a+be^x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(a+b*exp(x))^3,x)
```

```
[Out] 1/2*a/b^2/(a+b*exp(x))^2-1/b^2/(a+b*exp(x))
```

Maxima [A] time = 0.765769, size = 82, normalized size = 3.9

$$-\frac{be^{x}}{b^{4}e^{(2x)}+2\,ab^{3}e^{x}+a^{2}b^{2}}-\frac{a}{2\left(b^{4}e^{(2x)}+2\,ab^{3}e^{x}+a^{2}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a)^3,x, algorithm="maxima")
```

```
[Out] -b*e^x/(b^4*e^(2*x) + 2*a*b^3*e^x + a^2*b^2) - 1/2*a/(b^4*e^(2*x)
 + 2*a*b^3*e^x + a^2*b^2)
```

Fricas [A] time = 0.265172, size = 47, normalized size = 2.24

$$-\frac{2\,be^{x}+a}{2\left(b^{4}e^{(2x)}+2\,ab^{3}e^{x}+a^{2}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*e^x + a)/(b^4*e^(2*x) + 2*a*b^3*e^x + a^2*b^2)
```

Sympy [A] time = 0.249224, size = 37, normalized size = 1.76

$$\frac{-a-2be^{x}}{2a^{2}b^{2}+4ab^{3}e^{x}+2b^{4}e^{2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(a+b*exp(x))**3,x)
```

```
[Out] (-a - 2*b*exp(x))/(2*a**2*b**2 + 4*a*b**3*exp(x) + 2*b**4*exp(2*x
))
```

GIAC/XCAS [A] time = 0.323473, size = 27, normalized size = 1.29

$$-\frac{2\,be^{x}+a}{2\,(be^{x}+a)^{2}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(b*e^x + a)^3,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*e^x + a)/((b*e^x + a)^2*b^2)
```

3.21 $\int \frac{e^{2x}}{(a+be^x)^4} dx$

Optimal. Leaf size=34

$$\frac{a}{3b^2 (a + be^x)^3} - \frac{1}{2b^2 (a + be^x)^2}$$

```
[Out] a/(3*b^2*(a + b*E^x)^3) - 1/(2*b^2*(a + b*E^x)^2)
```

Rubi [A] time = 0.0626508, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{a}{3b^2 (a + be^x)^3} - \frac{1}{2b^2 (a + be^x)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(a + b*E^x)^4,x]

[Out] a/(3*b^2*(a + b*E^x)^3) - 1/(2*b^2*(a + b*E^x)^2)
```

Rubi in Sympy [A] time = 10.2201, size = 29, normalized size = 0.85

$$\frac{a}{3b^2 (a + be^x)^3} - \frac{1}{2b^2 (a + be^x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(a+b*exp(x))**4,x)

[Out] a/(3*b**2*(a + b*exp(x))**3) - 1/(2*b**2*(a + b*exp(x))**2)
```

Mathematica [A] time = 0.0161726, size = 24, normalized size = 0.71

$$-\frac{a + 3be^x}{6b^2 (a + be^x)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(a + b*E^x)^4,x]

[Out] -(a + 3*b*E^x)/(6*b^2*(a + b*E^x)^3)
```

Maple [A] time = 0.009, size = 29, normalized size = 0.9

$$\frac{a}{3\, b^2 (a + be^x)^3} - \frac{1}{2\, b^2 (a + be^x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(a+b*exp(x))^4,x)
```

```
[Out] 1/3*a/b^2/(a+b*exp(x))^3-1/2/b^2/(a+b*exp(x))^2
```

Maxima [A] time = 0.813192, size = 115, normalized size = 3.38

$$-\frac{be^{x}}{2\left(b^{5}e^{(3\,x)}+3\,ab^{4}e^{(2\,x)}+3\,a^{2}b^{3}e^{x}+a^{3}b^{2}\right)}-\frac{a}{6\left(b^{5}e^{(3\,x)}+3\,ab^{4}e^{(2\,x)}+3\,a^{2}b^{3}e^{x}+a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 0.254484, size = 63, normalized size = 1.85

$$-\frac{3\,be^{x}+a}{6\left(b^{5}e^{(3\,x)}+3\,ab^{4}e^{(2\,x)}+3\,a^{2}b^{3}e^{x}+a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.309338, size = 51, normalized size = 1.5

$$\frac{-a-3be^{x}}{6a^{3}b^{2}+18a^{2}b^{3}e^{x}+18ab^{4}e^{2x}+6b^{5}e^{3x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(a+b*exp(x))**4,x)
```

```
[Out] (-a - 3*b*exp(x))/(6*a**3*b**2 + 18*a**2*b**3*exp(x) + 18*a*b**4*
exp(2*x) + 6*b**5*exp(3*x))
```

GIAC/XCAS [A] time = 0.32198, size = 27, normalized size = 0.79

$$-\frac{3\,be^{x}+a}{6\,(be^{x}+a)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/6*(3*b*e^x + a)/((b*e^x + a)^3*b^2)
```

3.22 $\int \frac{e^{4x}}{a+be^{2x}}\,dx$

Optimal. Leaf size=31

$$\frac{e^{2x}}{2b}-\frac{a\log\left(a+be^{2x}\right)}{2b^2}$$

```
[Out] E^(2*x)/(2*b) - (a*Log[a + b*E^(2*x)])/(2*b^2)
```

Rubi [A] time = 0.0609833, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{e^{2x}}{2b}-\frac{a\log\left(a+be^{2x}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x)/(a + b*E^(2*x)),x]

[Out] E^(2*x)/(2*b) - (a*Log[a + b*E^(2*x)])/(2*b^2)
```

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

$$-\frac{a\log\left(a+be^{2x}\right)}{2b^2}+\frac{\int^{e^{2x}}\frac{1}{b}\,dx}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x)/(a+b*exp(2*x)),x)

[Out] -a*log(a + b*exp(2*x))/(2*b**2) + Integral(1/b, (x, exp(2*x)))/2
```

Mathematica [A] time = 0.0154846, size = 28, normalized size = 0.9

$$\frac{be^{2x}-a\log\left(a+be^{2x}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x)/(a + b*E^(2*x)),x]

[Out] (b*E^(2*x) - a*Log[a + b*E^(2*x)])/(2*b^2)
```

Maple [A] time = 0.006, size = 26, normalized size = 0.8

$$\frac{(e^x)^2}{2\,b}-\frac{a\ln\left(a+b\,(e^x)^2\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x)/(a+b*exp(2*x)),x)
```

```
[Out] 1/2/b*exp(x)^2-1/2*a/b^2*ln(a+b*exp(x)^2)
```

Maxima [A] time = 0.776565, size = 34, normalized size = 1.1

$$\frac{e^{(2\,x)}}{2\,b} - \frac{a\log\left(be^{(2\,x)} + a\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*e^(2*x)/b - 1/2*a*log(b*e^(2*x) + a)/b^2
```

Fricas [A] time = 0.249887, size = 32, normalized size = 1.03

$$\frac{be^{(2\,x)} - a\log\left(be^{(2\,x)} + a\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*e^(2*x) - a*log(b*e^(2*x) + a))/b^2
```

Sympy [A] time = 0.284495, size = 29, normalized size = 0.94

$$-\frac{a\log\left(\frac{a}{b} + e^{2x}\right)}{2b^2} + \begin{cases} \frac{e^{2x}}{2b} & \text{for}\ 2b \neq 0 \\ \frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x)/(a+b*exp(2*x)),x)
```

```
[Out] -a*log(a/b + exp(2*x))/(2*b**2) + Piecewise((exp(2*x)/(2*b), Ne(2
*b, 0)), (x/b, True))
```

GIAC/XCAS [A] time = 0.248446, size = 35, normalized size = 1.13

$$\frac{e^{(2\,x)}}{2\,b} - \frac{a\ln\left(\left|be^{(2\,x)} + a\right|\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*e^(2*x)/b - 1/2*a*ln(abs(b*e^(2*x) + a))/b^2
```

3.23 $\int \frac{e^{4x}}{(a+be^{2x})^2}\,dx$

Optimal. Leaf size=37

$$\frac{a}{2b^2\left(a+be^{2x}\right)}+\frac{\log\left(a+be^{2x}\right)}{2b^2}$$

```
[Out] a/(2*b^2*(a + b*E^(2*x))) + Log[a + b*E^(2*x)]/(2*b^2)
```

Rubi [A] time = 0.0658733, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{a}{2b^2\left(a+be^{2x}\right)}+\frac{\log\left(a+be^{2x}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x)/(a + b*E^(2*x))^2,x]

[Out] a/(2*b^2*(a + b*E^(2*x))) + Log[a + b*E^(2*x)]/(2*b^2)
```

Rubi in Sympy [A] time = 10.5957, size = 29, normalized size = 0.78

$$\frac{a}{2b^2\left(a+be^{2x}\right)}+\frac{\log\left(a+be^{2x}\right)}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x)/(a+b*exp(2*x))**2,x)

[Out] a/(2*b**2*(a + b*exp(2*x))) + log(a + b*exp(2*x))/(2*b**2)
```

Mathematica [A] time = 0.0255049, size = 31, normalized size = 0.84

$$\frac{\frac{a}{a+be^{2x}}+\log\left(a+be^{2x}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x)/(a + b*E^(2*x))^2,x]

[Out] (a/(a + b*E^(2*x)) + Log[a + b*E^(2*x)])/(2*b^2)
```

Maple [A] time = 0.009, size = 32, normalized size = 0.9

$$\frac{a}{2\,b^2\left(a+b\left(e^x\right)^2\right)}+\frac{\ln\left(a+b\left(e^x\right)^2\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x)/(a+b*exp(2*x))^2,x)
```

```
[Out] 1/2*a/b^2/(a+b*exp(x)^2)+1/2/b^2*ln(a+b*exp(x)^2)
```

Maxima [A] time = 0.81314, size = 46, normalized size = 1.24

$$\frac{a}{2\left(b^{3}e^{(2x)} + ab^{2}\right)} + \frac{\log\left(be^{(2x)} + a\right)}{2b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*a/(b^3*e^(2*x) + a*b^2) + 1/2*log(b*e^(2*x) + a)/b^2
```

Fricas [A] time = 0.264052, size = 51, normalized size = 1.38

$$\frac{\left(be^{(2x)} + a\right)\log\left(be^{(2x)} + a\right) + a}{2\left(b^{3}e^{(2x)} + ab^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*((b*e^(2*x) + a)*log(b*e^(2*x) + a) + a)/(b^3*e^(2*x) + a*b^2
)
```

Sympy [A] time = 0.278996, size = 32, normalized size = 0.86

$$\frac{a}{2ab^{2} + 2b^{3}e^{2x}} + \frac{\log\left(\frac{a}{b} + e^{2x}\right)}{2b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x)/(a+b*exp(2*x))**2,x)
```

```
[Out] a/(2*a*b**2 + 2*b**3*exp(2*x)) + log(a/b + exp(2*x))/(2*b**2)
```

GIAC/XCAS [A] time = 0.244357, size = 43, normalized size = 1.16

$$\frac{\ln\left(\left|be^{(2x)} + a\right|\right)}{2b^{2}} + \frac{a}{2\left(be^{(2x)} + a\right)b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*ln(abs(b*e^(2*x) + a))/b^2 + 1/2*a/((b*e^(2*x) + a)*b^2)
```

3.24 $\int \frac{e^{4x}}{(a+be^{2x})^3}\,dx$

Optimal. Leaf size=23

$$\frac{e^{4x}}{4a\left(a+be^{2x}\right)^2}$$

```
[Out] E^(4*x)/(4*a*(a + b*E^(2*x))^2)
```

Rubi [A] time = 0.0467332, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{e^{4x}}{4a\left(a+be^{2x}\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x)/(a + b*E^(2*x))^3,x]
```

```
[Out] E^(4*x)/(4*a*(a + b*E^(2*x))^2)
```

Rubi in Sympy [A] time = 7.45252, size = 17, normalized size = 0.74

$$\frac{e^{4x}}{4a\left(a+be^{2x}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x)/(a+b*exp(2*x))**3,x)
```

```
[Out] exp(4*x)/(4*a*(a + b*exp(2*x))**2)
```

Mathematica [A] time = 0.016291, size = 28, normalized size = 1.22

$$-\frac{a+2be^{2x}}{4b^2\left(a+be^{2x}\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x)/(a + b*E^(2*x))^3,x]
```

```
[Out] -(a + 2*b*E^(2*x))/(4*b^2*(a + b*E^(2*x))^2)
```

Maple [A] time = 0.009, size = 33, normalized size = 1.4

$$\frac{a}{4\,b^2\left(a+b\left(\mathrm{e}^x\right)^2\right)^2}-\frac{1}{2\,b^2\left(a+b\left(\mathrm{e}^x\right)^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x)/(a+b*exp(2*x))^3,x)
```

```
[Out] 1/4*a/b^2/(a+b*exp(x)^2)^2-1/2/b^2/(a+b*exp(x)^2)
```

Maxima [A] time = 0.782616, size = 90, normalized size = 3.91

$$-\frac{be^{(2x)}}{2\left(b^4e^{(4x)} + 2ab^3e^{(2x)} + a^2b^2\right)} - \frac{a}{4\left(b^4e^{(4x)} + 2ab^3e^{(2x)} + a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*b*e^(2*x)/(b^4*e^(4*x) + 2*a*b^3*e^(2*x) + a^2*b^2) - 1/4*a/
(b^4*e^(4*x) + 2*a*b^3*e^(2*x) + a^2*b^2)
```

Fricas [A] time = 0.241754, size = 53, normalized size = 2.3

$$-\frac{2\,be^{(2x)} + a}{4\left(b^4e^{(4x)} + 2ab^3e^{(2x)} + a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(2*b*e^(2*x) + a)/(b^4*e^(4*x) + 2*a*b^3*e^(2*x) + a^2*b^2)
```

Sympy [A] time = 0.260451, size = 41, normalized size = 1.78

$$\frac{-a - 2be^{2x}}{4a^2b^2 + 8ab^3e^{2x} + 4b^4e^{4x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x)/(a+b*exp(2*x))**3,x)
```

```
[Out] (-a - 2*b*exp(2*x))/(4*a**2*b**2 + 8*a*b**3*exp(2*x) + 4*b**4*exp
(4*x))
```

GIAC/XCAS [A] time = 0.263672, size = 32, normalized size = 1.39

$$-\frac{2\,be^{(2x)} + a}{4\left(be^{(2x)} + a\right)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(2*b*e^(2*x) + a)/((b*e^(2*x) + a)^2*b^2)
```

3.25 $\int \frac{e^{4x}}{(a+be^{2x})^4}\,dx$

Optimal. Leaf size=38

$$\frac{a}{6b^2\,(a+be^{2x})^3}-\frac{1}{4b^2\,(a+be^{2x})^2}$$

```
[Out] a/(6*b^2*(a + b*E^(2*x))^3) - 1/(4*b^2*(a + b*E^(2*x))^2)
```

Rubi [A] time = 0.0687759, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{a}{6b^2\,(a+be^{2x})^3}-\frac{1}{4b^2\,(a+be^{2x})^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x)/(a + b*E^(2*x))^4,x]

[Out] a/(6*b^2*(a + b*E^(2*x))^3) - 1/(4*b^2*(a + b*E^(2*x))^2)
```

Rubi in Sympy [A] time = 11.1862, size = 32, normalized size = 0.84

$$\frac{a}{6b^2\,(a+be^{2x})^3}-\frac{1}{4b^2\,(a+be^{2x})^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x)/(a+b*exp(2*x))**4,x)

[Out] a/(6*b**2*(a + b*exp(2*x))**3) - 1/(4*b**2*(a + b*exp(2*x))**2)
```

Mathematica [A] time = 0.0169959, size = 28, normalized size = 0.74

$$-\frac{a+3be^{2x}}{12b^2\,(a+be^{2x})^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x)/(a + b*E^(2*x))^4,x]

[Out] -(a + 3*b*E^(2*x))/(12*b^2*(a + b*E^(2*x))^3)
```

Maple [A] time = 0.007, size = 33, normalized size = 0.9

$$-\frac{1}{4\,b^2\left(a+b\,(e^x)^2\right)^2}+\frac{a}{6\,b^2\left(a+b\,(e^x)^2\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x)/(a+b*exp(2*x))^4,x)
```

```
[Out] -1/4/b^2/(a+b*exp(x)^2)^2+1/6*a/b^2/(a+b*exp(x)^2)^3
```

Maxima [A] time = 0.78131, size = 123, normalized size = 3.24

$$-\frac{be^{(2x)}}{4\left(b^5e^{(6x)} + 3\,ab^4e^{(4x)} + 3\,a^2b^3e^{(2x)} + a^3b^2\right)} - \frac{a}{12\left(b^5e^{(6x)} + 3\,ab^4e^{(4x)} + 3\,a^2b^3e^{(2x)} + a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*b*e^(2*x)/(b^5*e^(6*x) + 3*a*b^4*e^(4*x) + 3*a^2*b^3*e^(2*x)
 + a^3*b^2) - 1/12*a/(b^5*e^(6*x) + 3*a*b^4*e^(4*x) + 3*a^2*b^3*e
^(2*x) + a^3*b^2)
```

Fricas [A] time = 0.249671, size = 69, normalized size = 1.82

$$-\frac{3\,be^{(2x)} + a}{12\left(b^5e^{(6x)} + 3\,ab^4e^{(4x)} + 3\,a^2b^3e^{(2x)} + a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/12*(3*b*e^(2*x) + a)/(b^5*e^(6*x) + 3*a*b^4*e^(4*x) + 3*a^2*b^
3*e^(2*x) + a^3*b^2)
```

Sympy [A] time = 0.313511, size = 54, normalized size = 1.42

$$\frac{-a - 3be^{2x}}{12a^3b^2 + 36a^2b^3e^{2x} + 36ab^4e^{4x} + 12b^5e^{6x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x)/(a+b*exp(2*x))**4,x)
```

```
[Out] (-a - 3*b*exp(2*x))/(12*a**3*b**2 + 36*a**2*b**3*exp(2*x) + 36*a*
b**4*exp(4*x) + 12*b**5*exp(6*x))
```

GIAC/XCAS [A] time = 0.251214, size = 32, normalized size = 0.84

$$-\frac{3\,be^{(2x)} + a}{12\left(be^{(2x)} + a\right)^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/12*(3*b*e^(2*x) + a)/((b*e^(2*x) + a)^3*b^2)
```

3.26 $\int \frac{e^{4x}}{(a+be^{2x})^{2/3}}\,dx$

Optimal. Leaf size=42

$$\frac{3\left(a+be^{2x}\right)^{4/3}}{8b^2}-\frac{3a\sqrt[3]{a+be^{2x}}}{2b^2}$$

```
[Out] (-3*a*(a + b*E^(2*x))^(1/3))/(2*b^2) + (3*(a + b*E^(2*x))^(4/3))/
(8*b^2)
```

Rubi [A] time = 0.0793599, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{3\left(a+be^{2x}\right)^{4/3}}{8b^2}-\frac{3a\sqrt[3]{a+be^{2x}}}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^(4*x)/(a + b*E^(2*x))^(2/3),x]
```

```
[Out] (-3*a*(a + b*E^(2*x))^(1/3))/(2*b^2) + (3*(a + b*E^(2*x))^(4/3))/
(8*b^2)
```

Rubi in Sympy [A] time = 10.7157, size = 37, normalized size = 0.88

$$-\frac{3a\sqrt[3]{a+be^{2x}}}{2b^2}+\frac{3\left(a+be^{2x}\right)^{\frac{4}{3}}}{8b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(4*x)/(a+b*exp(2*x))**(2/3),x)
```

```
[Out] -3*a*(a + b*exp(2*x))**(1/3)/(2*b**2) + 3*(a + b*exp(2*x))**(4/3)
/(8*b**2)
```

Mathematica [A] time = 0.0288513, size = 31, normalized size = 0.74

$$\frac{3\left(be^{2x}-3a\right)\sqrt[3]{a+be^{2x}}}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(4*x)/(a + b*E^(2*x))^(2/3),x]
```

```
[Out] (3*(-3*a + b*E^(2*x))*(a + b*E^(2*x))^(1/3))/(8*b^2)
```

Maple [A] time = 0.026, size = 27, normalized size = 0.6

$$-\frac{-3\,b{e^{2\,x}}+9\,a}{8\,{b}^{2}}\sqrt[3]{a+b{e^{2\,x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x)/(a+b*exp(2*x))^(2/3),x)

[Out] -3/8*(a+b*exp(2*x))^(1/3)*(-b*exp(2*x)+3*a)/b^2
```

Maxima [A] time = 0.770795, size = 43, normalized size = 1.02

$$\frac{3\left(be^{(2x)}+a\right)^{\frac{4}{3}}}{8b^2}-\frac{3\left(be^{(2x)}+a\right)^{\frac{1}{3}}a}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] 3/8*(b*e^(2*x) + a)^(4/3)/b^2 - 3/2*(b*e^(2*x) + a)^(1/3)*a/b^2
```

Fricas [A] time = 0.26775, size = 34, normalized size = 0.81

$$\frac{3\left(be^{(2x)}+a\right)^{\frac{1}{3}}\left(be^{(2x)}-3a\right)}{8b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] 3/8*(b*e^(2*x) + a)^(1/3)*(b*e^(2*x) - 3*a)/b^2
```

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

$$\int\frac{e^{4x}}{(a+be^{2x})^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x)/(a+b*exp(2*x))**(2/3),x)

[Out] Integral(exp(4*x)/(a + b*exp(2*x))**(2/3), x)
```

GIAC/XCAS [A] time = 0.288609, size = 39, normalized size = 0.93

$$\frac{3\left(\left(be^{(2x)}+a\right)^{\frac{4}{3}}-4\left(be^{(2x)}+a\right)^{\frac{1}{3}}a\right)}{8b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] 3/8*((b*e^(2*x) + a)^(4/3) - 4*(b*e^(2*x) + a)^(1/3)*a)/b^2
```

3.27 $\int e^{-nx}\left(a+be^{nx}\right)dx$

Optimal. Leaf size=16

$$bx-\frac{ae^{-nx}}{n}$$

```
[Out] -(a/(E^(n*x)*n)) + b*x
```

Rubi [A] time = 0.0350138, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$bx-\frac{ae^{-nx}}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*E^(n*x))/E^(n*x),x]

[Out] -(a/(E^(n*x)*n)) + b*x
```

Rubi in Sympy [A] time = 6.06691, size = 17, normalized size = 1.06

$$-\frac{ae^{-nx}}{n}+\frac{b\log\left(e^{nx}\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b*exp(n*x))/exp(n*x),x)

[Out] -a*exp(-n*x)/n + b*log(exp(n*x))/n
```

Mathematica [A] time = 0.0101745, size = 16, normalized size = 1.

$$bx-\frac{ae^{-nx}}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*E^(n*x))/E^(n*x),x]

[Out] -(a/(E^(n*x)*n)) + b*x
```

Maple [A] time = 0.013, size = 24, normalized size = 1.5

$$-\frac{a}{ne^{nx}}+\frac{b\ln\left(e^{nx}\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(n*x))/exp(n*x),x)
```

```
[Out] -a/exp(n*x)/n+1/n*b*ln(exp(n*x))
```

Maxima [A] time = 0.780423, size = 20, normalized size = 1.25

$$bx - \frac{ae^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)*e^(-n*x),x, algorithm="maxima")
```

```
[Out] b*x - a*e^(-n*x)/n
```

Fricas [A] time = 0.277733, size = 28, normalized size = 1.75

$$\frac{\left(bnxe^{(nx)} - a\right)e^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)*e^(-n*x),x, algorithm="fricas")
```

```
[Out] (b*n*x*e^(n*x) - a)*e^(-n*x)/n
```

Sympy [A] time = 0.18602, size = 15, normalized size = 0.94

$$bx + \begin{cases} -\frac{ae^{-nx}}{n} & \text{for } n \neq 0 \\ ax & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(n*x))/exp(n*x),x)
```

```
[Out] b*x + Piecewise((-a*exp(-n*x)/n, Ne(n, 0)), (a*x, True))
```

GIAC/XCAS [A] time = 0.244053, size = 20, normalized size = 1.25

$$bx - \frac{ae^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)*e^(-n*x),x, algorithm="giac")
```

```
[Out] b*x - a*e^(-n*x)/n
```

3.28 $\int e^{-nx}\left(a+be^{nx}\right)^2\,dx$

Optimal. Leaf size=32

$$-\frac{a^2e^{-nx}}{n}+2abx+\frac{b^2e^{nx}}{n}$$

```
[Out] -(a^2/(E^(n*x)*n)) + (b^2*E^(n*x))/n + 2*a*b*x
```

Rubi [A] time = 0.0651866, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a^2e^{-nx}}{n}+2abx+\frac{b^2e^{nx}}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*E^(n*x))^2/E^(n*x),x]
```

```
[Out] -(a^2/(E^(n*x)*n)) + (b^2*E^(n*x))/n + 2*a*b*x
```

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

$$-\frac{a^2e^{-nx}}{n}+\frac{2ab\log\left(e^{nx}\right)}{n}+\frac{\int^{e^{nx}}b^2\,dx}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b*exp(n*x))**2/exp(n*x),x)
```

```
[Out] -a**2*exp(-n*x)/n + 2*a*b*log(exp(n*x))/n + Integral(b**2, (x, ex
p(n*x)))/n
```

Mathematica [A] time = 0.0208271, size = 32, normalized size = 1.

$$-\frac{a^2e^{-nx}}{n}+2abx+\frac{b^2e^{nx}}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*E^(n*x))^2/E^(n*x),x]
```

```
[Out] -(a^2/(E^(n*x)*n)) + (b^2*E^(n*x))/n + 2*a*b*x
```

Maple [A] time = 0.01, size = 39, normalized size = 1.2

$$\frac{b^2e^{nx}}{n}-\frac{a^2}{ne^{nx}}+2\,\frac{ab\ln\left(e^{nx}\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(n*x))^2/exp(n*x),x)
```

```
[Out] b^2*exp(n*x)/n-a^2/exp(n*x)/n+2/n*a*b*ln(exp(n*x))
```

Maxima [A] time = 0.79794, size = 41, normalized size = 1.28

$$2\,abx + \frac{b^2e^{(nx)}}{n} - \frac{a^2e^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)^2*e^(-n*x),x, algorithm="maxima")
```

```
[Out] 2*a*b*x + b^2*e^(n*x)/n - a^2*e^(-n*x)/n
```

Fricas [A] time = 0.237639, size = 46, normalized size = 1.44

$$\frac{\left(2\,abnxe^{(nx)} + b^2e^{(2\,nx)} - a^2\right)e^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)^2*e^(-n*x),x, algorithm="fricas")
```

```
[Out] (2*a*b*n*x*e^(n*x) + b^2*e^(2*n*x) - a^2)*e^(-n*x)/n
```

Sympy [A] time = 0.298707, size = 39, normalized size = 1.22

$$2abx + \begin{cases} \frac{-a^2ne^{-nx}+b^2ne^{nx}}{n^2} & \text{for } n^2 \neq 0 \\ x\left(a^2+b^2\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(n*x))**2/exp(n*x),x)
```

```
[Out] 2*a*b*x + Piecewise(((-a**2*n*exp(-n*x) + b**2*n*exp(n*x))/n**2,
Ne(n**2, 0)), (x*(a**2 + b**2), True))
```

GIAC/XCAS [A] time = 0.23564, size = 41, normalized size = 1.28

$$2\,abx + \frac{b^2e^{(nx)}}{n} - \frac{a^2e^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)^2*e^(-n*x),x, algorithm="giac")
```

```
[Out] 2*a*b*x + b^2*e^(n*x)/n - a^2*e^(-n*x)/n
```

3.29 $\int e^{-nx}(a+be^{nx})^3\,dx$

Optimal. Leaf size=52

$$-\frac{a^3e^{-nx}}{n}+3a^2bx+\frac{3ab^2e^{nx}}{n}+\frac{b^3e^{2nx}}{2n}$$

```
[Out] -(a^3/(E^(n*x)*n)) + (3*a*b^2*E^(n*x))/n + (b^3*E^(2*n*x))/(2*n)
+ 3*a^2*b*x
```

Rubi [A] time = 0.0812827, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a^3e^{-nx}}{n}+3a^2bx+\frac{3ab^2e^{nx}}{n}+\frac{b^3e^{2nx}}{2n}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*E^(n*x))^3/E^(n*x),x]
```

```
[Out] -(a^3/(E^(n*x)*n)) + (3*a*b^2*E^(n*x))/n + (b^3*E^(2*n*x))/(2*n)
+ 3*a^2*b*x
```

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

$$-\frac{a^3e^{-nx}}{n}+\frac{3a^2b\log(e^{nx})}{n}+\frac{3ab^2e^{nx}}{n}+\frac{b^3\int^{e^{nx}}x\,dx}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*exp(n*x))**3/exp(n*x),x)
```

```
[Out] -a**3*exp(-n*x)/n + 3*a**2*b*log(exp(n*x))/n + 3*a*b**2*exp(n*x)/
n + b**3*Integral(x, (x, exp(n*x)))/n
```

Mathematica [A] time = 0.0264373, size = 48, normalized size = 0.92

$$\frac{-2a^3e^{-nx}+6a^2bnx+6ab^2e^{nx}+b^3e^{2nx}}{2n}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*E^(n*x))^3/E^(n*x),x]
```

```
[Out] ((-2*a^3)/E^(n*x) + 6*a*b^2*E^(n*x) + b^3*E^(2*n*x) + 6*a^2*b*n*x
)/(2*n)
```

Maple [A] time = 0.01, size = 57, normalized size = 1.1

$$\frac{b^3(e^{nx})^2}{2n}+3\frac{ab^2e^{nx}}{n}-\frac{a^3}{ne^{nx}}+3\frac{a^2b\ln(e^{nx})}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(n*x))^3/exp(n*x),x)
```

```
[Out] 1/2/n*b^3*exp(n*x)^2+3*a*b^2*exp(n*x)/n-a^3/exp(n*x)/n+3/n*a^2*b*
ln(exp(n*x))
```

Maxima [A] time = 0.805785, size = 63, normalized size = 1.21

$$3\,a^2bx + \frac{b^3e^{(2\,nx)}}{2\,n} + \frac{3\,ab^2e^{(nx)}}{n} - \frac{a^3e^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)^3*e^(-n*x),x, algorithm="maxima")
```

```
[Out] 3*a^2*b*x + 1/2*b^3*e^(2*n*x)/n + 3*a*b^2*e^(n*x)/n - a^3*e^(-n*x
)/n
```

Fricas [A] time = 0.244733, size = 65, normalized size = 1.25

$$\frac{\left(6\,a^2bnxe^{(nx)} + b^3e^{(3\,nx)} + 6\,ab^2e^{(2\,nx)} - 2\,a^3\right)e^{(-nx)}}{2\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)^3*e^(-n*x),x, algorithm="fricas")
```

```
[Out] 1/2*(6*a^2*b*n*x*e^(n*x) + b^3*e^(3*n*x) + 6*a*b^2*e^(2*n*x) - 2*
a^3)*e^(-n*x)/n
```

Sympy [A] time = 0.37586, size = 73, normalized size = 1.4

$$3a^2bx + \begin{cases} \frac{-2a^3n^2e^{-nx}+6ab^2n^2e^{nx}+b^3n^2e^{2nx}}{2n^3} & \text{for } 2n^3 \neq 0 \\ x\left(a^3 + 3ab^2 + b^3\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(n*x))**3/exp(n*x),x)
```

```
[Out] 3*a**2*b*x + Piecewise(((-2*a**3*n**2*exp(-n*x) + 6*a*b**2*n**2*e
xp(n*x) + b**3*n**2*exp(2*n*x))/(2*n**3), Ne(2*n**3, 0)), (x*(a**
3 + 3*a*b**2 + b**3), True))
```

GIAC/XCAS [A] time = 0.224016, size = 63, normalized size = 1.21

$$3\,a^2bx + \frac{b^3e^{(2\,nx)}}{2\,n} + \frac{3\,ab^2e^{(nx)}}{n} - \frac{a^3e^{(-nx)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^(n*x) + a)^3*e^(-n*x),x, algorithm="giac")
```

```
[Out] 3*a^2*b*x + 1/2*b^3*e^(2*n*x)/n + 3*a*b^2*e^(n*x)/n - a^3*e^(-n*x
)/n
```

3.30 $\int \frac{e^{-nx}}{a+be^{nx}}\,dx$

Optimal. Leaf size=40

$$\frac{b\log\left(a+be^{nx}\right)}{a^2n}-\frac{bx}{a^2}-\frac{e^{-nx}}{an}$$

```
[Out] -(1/(a*E^(n*x)*n)) - (b*x)/a^2 + (b*Log[a + b*E^(n*x)])/(a^2*n)
```

Rubi [A] time = 0.0813109, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{b\log\left(a+be^{nx}\right)}{a^2n}-\frac{bx}{a^2}-\frac{e^{-nx}}{an}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(E^(n*x)*(a + b*E^(n*x))),x]
```

```
[Out] -(1/(a*E^(n*x)*n)) - (b*x)/a^2 + (b*Log[a + b*E^(n*x)])/(a^2*n)
```

Rubi in Sympy [A] time = 14.7953, size = 39, normalized size = 0.98

$$-\frac{e^{-nx}}{an}+\frac{b\log\left(a+be^{nx}\right)}{a^2n}-\frac{b\log\left(e^{nx}\right)}{a^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/exp(n*x)/(a+b*exp(n*x)),x)
```

```
[Out] -exp(-n*x)/(a*n) + b*log(a + b*exp(n*x))/(a**2*n) - b*log(exp(n*x
))/(a**2*n)
```

Mathematica [A] time = 0.0203704, size = 34, normalized size = 0.85

$$\frac{b\log\left(ae^{-nx}+b\right)}{a^2n}-\frac{e^{-nx}}{an}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(E^(n*x)*(a + b*E^(n*x))),x]
```

```
[Out] -(1/(a*E^(n*x)*n)) + (b*Log[b + a/E^(n*x)])/(a^2*n)
```

Maple [A] time = 0.015, size = 47, normalized size = 1.2

$$-\frac{1}{ae^{nx}n}-\frac{b\ln\left(e^{nx}\right)}{na^2}+\frac{b\ln\left(a+be^{nx}\right)}{na^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/exp(n*x)/(a+b*exp(n*x)),x)
```

```
[Out] -1/a/exp(n*x)/n-1/n/a^2*b*ln(exp(n*x))+b*ln(a+b*exp(n*x))/a^2/n
```

Maxima [A] time = 0.768101, size = 43, normalized size = 1.08

$$-\frac{e^{(-nx)}}{an}+\frac{b\log\left(ae^{(-nx)}+b\right)}{a^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a),x, algorithm="maxima")
```

```
[Out] -e^(-n*x)/(a*n) + b*log(a*e^(-n*x) + b)/(a^2*n)
```

Fricas [A] time = 0.278271, size = 53, normalized size = 1.32

$$-\frac{\left(bnxe^{(nx)}-be^{(nx)}\log\left(be^{(nx)}+a\right)+a\right)e^{(-nx)}}{a^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a),x, algorithm="fricas")
```

```
[Out] -(b*n*x*e^(n*x) - b*e^(n*x)*log(b*e^(n*x) + a) + a)*e^(-n*x)/(a^2
*n)
```

Sympy [A] time = 0.36772, size = 49, normalized size = 1.22

$$\begin{cases}-\frac{e^{-nx}}{an} & \text{for } an\neq 0\\ x\left(\frac{b}{a^2}+\frac{a-b}{a^2}\right) & \text{otherwise}\end{cases}-\frac{bx}{a^2}+\frac{b\log\left(\frac{a}{b}+e^{nx}\right)}{a^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/exp(n*x)/(a+b*exp(n*x)),x)
```

```
[Out] Piecewise((-exp(-n*x)/(a*n), Ne(a*n, 0)), (x*(b/a**2 + (a - b)/a*
*2), True)) - b*x/a**2 + b*log(a/b + exp(n*x))/(a**2*n)
```

GIAC/XCAS [A] time = 0.245864, size = 51, normalized size = 1.27

$$-\frac{\frac{bnx}{a^2}+\frac{e^{(-nx)}}{a}-\frac{b\ln\left(\left|be^{(nx)}+a\right|\right)}{a^2}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a),x, algorithm="giac")
```

```
[Out] -(b*n*x/a^2 + e^(-n*x)/a - b*ln(abs(b*e^(n*x) + a))/a^2)/n
```

3.31 $\int \frac{e^{-nx}}{(a+be^{nx})^2} dx$

Optimal. Leaf size=61

$$\frac{2b\log\left(a+be^{nx}\right)}{a^3n}-\frac{2bx}{a^3}-\frac{b}{a^2n\left(a+be^{nx}\right)}-\frac{e^{-nx}}{a^2n}$$

```
[Out] -(1/(a^2*E^(n*x)*n)) - b/(a^2*(a + b*E^(n*x))*n) - (2*b*x)/a^3 +
(2*b*Log[a + b*E^(n*x)])/(a^3*n)
```

Rubi [A] time = 0.103323, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2b\log\left(a+be^{nx}\right)}{a^3n}-\frac{2bx}{a^3}-\frac{b}{a^2n\left(a+be^{nx}\right)}-\frac{e^{-nx}}{a^2n}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(E^(n*x)*(a + b*E^(n*x))^2),x]
```

```
[Out] -(1/(a^2*E^(n*x)*n)) - b/(a^2*(a + b*E^(n*x))*n) - (2*b*x)/a^3 +
(2*b*Log[a + b*E^(n*x)])/(a^3*n)
```

Rubi in Sympy [A] time = 16.7358, size = 60, normalized size = 0.98

$$-\frac{b}{a^2n\left(a+be^{nx}\right)}-\frac{e^{-nx}}{a^2n}+\frac{2b\log\left(a+be^{nx}\right)}{a^3n}-\frac{2b\log\left(e^{nx}\right)}{a^3n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/exp(n*x)/(a+b*exp(n*x))**2,x)
```

```
[Out] -b/(a**2*n*(a + b*exp(n*x))) - exp(-n*x)/(a**2*n) + 2*b*log(a + b
*exp(n*x))/(a**3*n) - 2*b*log(exp(n*x))/(a**3*n)
```

Mathematica [A] time = 0.0552531, size = 47, normalized size = 0.77

$$\frac{\frac{b^2}{ae^{-nx}+b}+2b\log\left(ae^{-nx}+b\right)-ae^{-nx}}{a^3n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(E^(n*x)*(a + b*E^(n*x))^2),x]
```

```
[Out] (-(a/E^(n*x)) + b^2/(b + a/E^(n*x)) + 2*b*Log[b + a/E^(n*x)])/(a^
3*n)
```

Maple [A] time = 0.019, size = 67, normalized size = 1.1

$$-\frac{1}{a^2e^{nx}n}-2\frac{b\ln\left(e^{nx}\right)}{na^3}-\frac{b}{a^2\left(a+be^{nx}\right)n}+2\frac{b\ln\left(a+be^{nx}\right)}{na^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/exp(n*x)/(a+b*exp(n*x))^2,x)
```

```
[Out] -1/a^2/exp(n*x)/n-2/n/a^3*b*ln(exp(n*x))-b/a^2/(a+b*exp(n*x))/n+2
*b*ln(a+b*exp(n*x))/a^3/n
```

Maxima [A] time = 0.778982, size = 77, normalized size = 1.26

$$\frac{b^2}{\left(a^4e^{(-nx)} + a^3b\right)n} - \frac{e^{(-nx)}}{a^2n} + \frac{2\,b\log\left(ae^{(-nx)} + b\right)}{a^3n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a)^2,x, algorithm="maxima")
```

```
[Out] b^2/((a^4*e^(-n*x) + a^3*b)*n) - e^(-n*x)/(a^2*n) + 2*b*log(a*e^(
-n*x) + b)/(a^3*n)
```

Fricas [A] time = 0.262998, size = 113, normalized size = 1.85

$$-\frac{2\,b^2nxe^{(2\,nx)} + a^2 + 2\,(abnx + ab)e^{(nx)} - 2\left(b^2e^{(2\,nx)} + abe^{(nx)}\right)\log\left(be^{(nx)} + a\right)}{a^3bne^{(2\,nx)} + a^4ne^{(nx)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a)^2,x, algorithm="fricas")
```

```
[Out] -(2*b^2*n*x*e^(2*n*x) + a^2 + 2*(a*b*n*x + a*b)*e^(n*x) - 2*(b^2*
e^(2*n*x) + a*b*e^(n*x))*log(b*e^(n*x) + a))/(a^3*b*n*e^(2*n*x) +
 a^4*n*e^(n*x))
```

Sympy [A] time = 0.449665, size = 78, normalized size = 1.28

$$-\frac{b}{a^3n + a^2bne^{nx}} + \begin{cases} -\frac{e^{-nx}}{a^2n} & \text{for}\: a^2n \neq 0 \\ x\left(\frac{2b}{a^3} + \frac{a-2b}{a^3}\right) & \text{otherwise} \end{cases} - \frac{2bx}{a^3} + \frac{2b\log\left(\frac{a}{b} + e^{nx}\right)}{a^3n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/exp(n*x)/(a+b*exp(n*x))**2,x)
```

```
[Out] -b/(a**3*n + a**2*b*n*exp(n*x)) + Piecewise((-exp(-n*x)/(a**2*n),
 Ne(a**2*n, 0)), (x*(2*b/a**3 + (a - 2*b)/a**3), True)) - 2*b*x/a
**3 + 2*b*log(a/b + exp(n*x))/(a**3*n)
```

GIAC/XCAS [A] time = 0.245269, size = 80, normalized size = 1.31

$$-\frac{\frac{2\,bnx}{a^3} - \frac{2\,b\ln\left(\left|be^{(nx)}+a\right|\right)}{a^3} + \frac{2\,be^{(nx)}+a}{\left(be^{(2\,nx)}+ae^{(nx)}\right)a^2}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a)^2,x, algorithm="giac")
```

```
[Out] -(2*b*n*x/a^3 - 2*b*ln(abs(b*e^(n*x) + a))/a^3 + (2*b*e^(n*x) + a
)/((b*e^(2*n*x) + a*e^(n*x))*a^2))/n
```

3.32 $\int \frac{e^{-nx}}{(a+be^{nx})^3} \, dx$

Optimal. Leaf size=83

$$\frac{3b\log(a+be^{nx})}{a^4n}-\frac{3bx}{a^4}-\frac{2b}{a^3n(a+be^{nx})}-\frac{e^{-nx}}{a^3n}-\frac{b}{2a^2n(a+be^{nx})^2}$$

```
[Out] -(1/(a^3*E^(n*x)*n)) - b/(2*a^2*(a + b*E^(n*x))^2*n) - (2*b)/(a^3
*(a + b*E^(n*x))*n) - (3*b*x)/a^4 + (3*b*Log[a + b*E^(n*x)])/(a^4
*n)
```

Rubi [A] time = 0.127716, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{3b\log(a+be^{nx})}{a^4n}-\frac{3bx}{a^4}-\frac{2b}{a^3n(a+be^{nx})}-\frac{e^{-nx}}{a^3n}-\frac{b}{2a^2n(a+be^{nx})^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(E^(n*x)*(a + b*E^(n*x))^3),x]
```

```
[Out] -(1/(a^3*E^(n*x)*n)) - b/(2*a^2*(a + b*E^(n*x))^2*n) - (2*b)/(a^3
*(a + b*E^(n*x))*n) - (3*b*x)/a^4 + (3*b*Log[a + b*E^(n*x)])/(a^4
*n)
```

Rubi in Sympy [A] time = 20.4443, size = 80, normalized size = 0.96

$$-\frac{b}{2a^2n(a+be^{nx})^2}-\frac{2b}{a^3n(a+be^{nx})}-\frac{e^{-nx}}{a^3n}+\frac{3b\log(a+be^{nx})}{a^4n}-\frac{3b\log(e^{nx})}{a^4n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/exp(n*x)/(a+b*exp(n*x))**3,x)
```

```
[Out] -b/(2*a**2*n*(a + b*exp(n*x))**2) - 2*b/(a**3*n*(a + b*exp(n*x)))
 - exp(-n*x)/(a**3*n) + 3*b*log(a + b*exp(n*x))/(a**4*n) - 3*b*lo
g(exp(n*x))/(a**4*n)
```

Mathematica [A] time = 0.136047, size = 66, normalized size = 0.8

$$\frac{\frac{b^2e^{nx}(6a+5be^{nx})}{(a+be^{nx})^2}+6b\log(ae^{-nx}+b)-2ae^{-nx}}{2a^4n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(E^(n*x)*(a + b*E^(n*x))^3),x]
```

```
[Out] ((-2*a)/E^(n*x) + (b^2*E^(n*x)*(6*a + 5*b*E^(n*x)))/(a + b*E^(n*x
))^2 + 6*b*Log[b + a/E^(n*x)])/(2*a^4*n)
```

Maple [A] time = 0.018, size = 86, normalized size = 1.

$$-\frac{1}{a^3e^{nx}n}-3\frac{b\ln(e^{nx})}{na^4}-\frac{b}{2a^2(a+be^{nx})^2n}+3\frac{b\ln(a+be^{nx})}{na^4}-2\frac{b}{a^3(a+be^{nx})n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(1/exp(n*x)/(a+b*exp(n*x))^3,x)
```

```
[Out] -1/a^3/exp(n*x)/n-3/n/a^4*b*ln(exp(n*x))-1/2*b/a^2/(a+b*exp(n*x))
^2/n+3*b*ln(a+b*exp(n*x))/a^4/n-2*b/a^3/(a+b*exp(n*x))/n
```

Maxima [A]   time = 0.806241, size = 115, normalized size = 1.39

$$\frac{6\,ab^2e^{(-nx)}+5\,b^3}{2\,\left(2\,a^5be^{(-nx)}+a^6e^{(-2\,nx)}+a^4b^2\right)n}-\frac{e^{(-nx)}}{a^3n}+\frac{3\,b\log\left(ae^{(-nx)}+b\right)}{a^4n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(-n*x)/(b*e^(n*x) + a)^3,x, algorithm="maxima")
```

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

Fricas [A]   time = 0.262734, size = 189, normalized size = 2.28

$$-\frac{6\,b^3nxe^{(3\,nx)}+2\,a^3+6\,\left(2\,ab^2nx+ab^2\right)e^{(2\,nx)}+3\,\left(2\,a^2bnx+3\,a^2b\right)e^{(nx)}-6\,\left(b^3e^{(3\,nx)}+2\,ab^2e^{(2\,nx)}+a^2be^{(nx)}\right)\log\left(be^{(nx)}\right.}{2\,\left(a^4b^2ne^{(3\,nx)}+2\,a^5bne^{(2\,nx)}+a^6ne^{(nx)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(-n*x)/(b*e^(n*x) + a)^3,x, algorithm="fricas")
```

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

Sympy [A]   time = 0.554041, size = 114, normalized size = 1.37

$$\frac{-5ab-4b^2e^{nx}}{2a^5n+4a^4bne^{nx}+2a^3b^2ne^{2nx}}+\begin{cases}-\frac{e^{-nx}}{a^3n} & \text{for } a^3n\neq 0\\ x\left(\frac{3b}{a^4}+\frac{a-3b}{a^4}\right) & \text{otherwise}\end{cases}-\frac{3bx}{a^4}+\frac{3b\log\left(\frac{a}{b}+e^{nx}\right)}{a^4n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(1/exp(n*x)/(a+b*exp(n*x))**3,x)
```

```
[Out] (-5*a*b - 4*b**2*exp(n*x))/(2*a**5*n + 4*a**4*b*n*exp(n*x) + 2*a*
*3*b**2*n*exp(2*n*x)) + Piecewise((-exp(-n*x)/(a**3*n), Ne(a**3*n
, 0)), (x*(3*b/a**4 + (a - 3*b)/a**4), True)) - 3*b*x/a**4 + 3*b*
log(a/b + exp(n*x))/(a**4*n)
```

GIAC/XCAS [A]   time = 0.269834, size = 103, normalized size = 1.24

$$-\frac{\frac{6\,bnx}{a^4}-\frac{6\,b\ln\left(\left|be^{(nx)}+a\right|\right)}{a^4}+\frac{\left(6\,ab^2e^{(2\,nx)}+9\,a^2be^{(nx)}+2\,a^3\right)e^{(-nx)}}{\left(be^{(nx)}+a\right)^2a^4}}{2\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-n*x)/(b*e^(n*x) + a)^3,x, algorithm="giac")
```

```
[Out] -1/2*(6*b*n*x/a^4 - 6*b*ln(abs(b*e^(n*x) + a))/a^4 + (6*a*b^2*e^(
2*n*x) + 9*a^2*b*e^(n*x) + 2*a^3)*e^(-n*x)/((b*e^(n*x) + a)^2*a^4
))/n
```

3.33 $\int \frac{f^{a+bx}}{c+df^{e+2bx}}\,dx$

Optimal. Leaf size=50

$$\frac{f^{a-\frac{e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)}{b\sqrt{c}\sqrt{d}\log(f)}$$

```
[Out] (f^(a - e/2)*ArcTan[(Sqrt[d]*f^(e/2 + b*x))/Sqrt[c]])/(b*Sqrt[c]*
Sqrt[d]*Log[f])
```

Rubi [A] time = 0.13024, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{f^{a-\frac{e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)}{b\sqrt{c}\sqrt{d}\log(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x)/(c + d*f^(e + 2*b*x)),x]
```

```
[Out] (f^(a - e/2)*ArcTan[(Sqrt[d]*f^(e/2 + b*x))/Sqrt[c]])/(b*Sqrt[c]*
Sqrt[d]*Log[f])
```

Rubi in Sympy [A] time = 19.0641, size = 46, normalized size = 0.92

$$\frac{f^{a-\frac{e}{2}}\operatorname{atan}\left(\frac{\sqrt{d}f^{-a+\frac{e}{2}}f^{a+bx}}{\sqrt{c}}\right)}{b\sqrt{c}\sqrt{d}\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] f**(a - e/2)*atan(sqrt(d)*f**(-a + e/2)*f**(a + b*x)/sqrt(c))/(b*
sqrt(c)*sqrt(d)*log(f))
```

Mathematica [A] time = 0.0299283, size = 50, normalized size = 1.

$$\frac{f^{a-\frac{e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)}{b\sqrt{c}\sqrt{d}\log(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x)/(c + d*f^(e + 2*b*x)),x]
```

```
[Out] (f^(a - e/2)*ArcTan[(Sqrt[d]*f^(e/2 + b*x))/Sqrt[c]])/(b*Sqrt[c]*
Sqrt[d]*Log[f])
```

Maple [B] time = 0.076, size = 91, normalized size = 1.8

$$-\frac{f^{a}}{2\,b\ln(f)}\ln\left(f^{bx+a}-f^{a}c\frac{1}{\sqrt{-f^{e}cd}}\right)\frac{1}{\sqrt{-f^{e}cd}}+\frac{f^{a}}{2\,b\ln(f)}\ln\left(f^{bx+a}+f^{a}c\frac{1}{\sqrt{-f^{e}cd}}\right)\frac{1}{\sqrt{-f^{e}cd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x+a)/(c+d*f^(2*b*x+e)),x)
```

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

Maxima [A] time = 0.92996, size = 100, normalized size = 2.

$$\frac{f^{a}\log\left(\frac{df^{bx+a+e}-\sqrt{-cdf^{e}}f^{a}}{df^{bx+a+e}+\sqrt{-cdf^{e}}f^{a}}\right)}{2\sqrt{-cdf^{e}}b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 0.243913, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(\frac{2\,cdf^{bx+a}f^{-2\,a+e}+\sqrt{-cdf^{-2\,a+e}}\left(df^{2\,bx+2\,a}f^{-2\,a+e}-c\right)}{df^{2\,bx+2\,a}f^{-2\,a+e}+c}\right)}{2\sqrt{-cdf^{-2\,a+e}}b\log(f)},-\frac{\arctan\left(\frac{c}{\sqrt{cdf^{-2\,a+e}}f^{bx+a}}\right)}{\sqrt{cdf^{-2\,a+e}}b\log(f)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [1/2*log((2*c*d*f^(b*x + a)*f^(-2*a + e) + sqrt(-c*d*f^(-2*a + e)
)*(d*f^(2*b*x + 2*a)*f^(-2*a + e) - c))/(d*f^(2*b*x + 2*a)*f^(-2*
a + e) + c))/(sqrt(-c*d*f^(-2*a + e))*b*log(f)), -arctan(c/(sqrt(
c*d*f^(-2*a + e))*f^(b*x + a)))/(sqrt(c*d*f^(-2*a + e))*b*log(f))
]
```

Sympy [A] time = 2.94388, size = 51, normalized size = 1.02

$$\operatorname{RootSum}\left(4z^{2}b^{2}cde^{e\log(f)}\log(f)^{2}+e^{2a\log(f)},\left(i\mapsto i\log\left(2ibc\log(f)+f^{a+bx}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] RootSum(4*_z**2*b**2*c*d*exp(e*log(f))*log(f)**2 + exp(2*a*log(f)
), Lambda(_i, _i*log(2*_i*b*c*log(f) + f**(a + b*x))))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx+a}}{df^{2\,bx+e}+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(b*x + a)/(d*f^(2*b*x + e) + c), x)
```

3.34 $\int \frac{f^{a+2bx}}{c+df^{e+2bx}}\,dx$

Optimal. Leaf size=34

$$\frac{f^{a-e}\log\left(df^{2bx+e}+c\right)}{2bd\log(f)}$$

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

Rubi [A] time = 0.130835, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13

$$\frac{f^{a-e}\log\left(df^{2bx+e}+c\right)}{2bd\log(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + 2*b*x)/(c + d*f^(e + 2*b*x)),x]
```

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

Rubi in Sympy [A] time = 15.6573, size = 26, normalized size = 0.76

$$\frac{f^{a-e}\log\left(c+df^{2bx+e}\right)}{2bd\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(2*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

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

Mathematica [A] time = 0.0124265, size = 34, normalized size = 1.

$$\frac{f^{a-e}\log\left(df^{2bx+e}+c\right)}{2bd\log(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + 2*b*x)/(c + d*f^(e + 2*b*x)),x]
```

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

Maple [A] time = 0.017, size = 47, normalized size = 1.4

$$\frac{f^{a}\ln\left(c+d{e}^{-\ln(f)a+\ln(f)e}{e}^{(2\,bx+a)\ln(f)}\right)}{2\,f^{e}d\ln\left(f\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(2*b*x+a)/(c+d*f^(2*b*x+e)),x)
```

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

Maxima [A] time = 0.975162, size = 43, normalized size = 1.26

$$\frac{f^{a-e}\log\left(df^{2\,bx+e}+c\right)}{2\,bd\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Fricas [A] time = 0.245408, size = 43, normalized size = 1.26

$$\frac{f^{a-e}\log\left(df^{2\,bx+e}+c\right)}{2\,bd\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 2.30078, size = 42, normalized size = 1.24

$$\frac{e^{(a-e)\log(f)}\log\left(\frac{ce^{a\log(f)}e^{-e\log(f)}}{d}+f^{a+2bx}\right)}{2bd\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(2*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

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

GIAC/XCAS [A] time = 0.240413, size = 50, normalized size = 1.47

$$\frac{f^{a}\ln\left(\left|df^{2\,bx}f^{e}+c\right|\right)}{2\,bdf^{e}\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*f^a*ln(abs(d*f^(2*b*x)*f^e + c))/(b*d*f^e*ln(f))
```

3.35 $\int \frac{f^{a+3bx}}{c+df^{e+2bx}}\,dx$

Optimal. Leaf size=88

$$\frac{f^{\frac{1}{2}(2a-3e)+\frac{1}{2}(2bx+e)}}{bd\log(f)}-\frac{\sqrt{c}f^{a-\frac{3e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{\frac{1}{2}(2bx+e)}}{\sqrt{c}}\right)}{bd^{3/2}\log(f)}$$

```
[Out] f^((2*a - 3*e)/2 + (e + 2*b*x)/2)/(b*d*Log[f]) - (Sqrt[c]*f^(a -
(3*e)/2)*ArcTan[(Sqrt[d]*f^((e + 2*b*x)/2))/Sqrt[c]])/(b*d^(3/2)*
Log[f])
```

Rubi [A] time = 0.128457, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$\frac{f^{\frac{1}{2}(2a-3e)+\frac{1}{2}(2bx+e)}}{bd\log(f)}-\frac{\sqrt{c}f^{a-\frac{3e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{\frac{1}{2}(2bx+e)}}{\sqrt{c}}\right)}{bd^{3/2}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + 3*b*x)/(c + d*f^(e + 2*b*x)),x]
```

```
[Out] f^((2*a - 3*e)/2 + (e + 2*b*x)/2)/(b*d*Log[f]) - (Sqrt[c]*f^(a -
(3*e)/2)*ArcTan[(Sqrt[d]*f^((e + 2*b*x)/2))/Sqrt[c]])/(b*d^(3/2)*
Log[f])
```

Rubi in Sympy [A] time = 23.4149, size = 66, normalized size = 0.75

$$-\frac{\sqrt{c}f^{a-\frac{3e}{2}}\operatorname{atan}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)}{bd^{\frac{3}{2}}\log(f)}+\frac{f^{a-\frac{3e}{2}}f^{bx+\frac{e}{2}}}{bd\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(3*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] -sqrt(c)*f**(a - 3*e/2)*atan(sqrt(d)*f**(b*x + e/2)/sqrt(c))/(b*d
**(3/2)*log(f)) + f**(a - 3*e/2)*f**(b*x + e/2)/(b*d*log(f))
```

Mathematica [A] time = 0.0737817, size = 67, normalized size = 0.76

$$\frac{\frac{f^{a+bx-e}}{d}-\frac{\sqrt{c}f^{a-\frac{3e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)}{d^{3/2}}}{b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + 3*b*x)/(c + d*f^(e + 2*b*x)),x]
```

```
[Out] (f^(a - e + b*x)/d - (Sqrt[c]*f^(a - (3*e)/2)*ArcTan[(Sqrt[d]*f^(
e/2 + b*x))/Sqrt[c]])/d^(3/2))/(b*Log[f])
```

Maple [B] time = 0.108, size = 171, normalized size = 1.9

$$\frac{1}{d\ln(f)\,b} f^{bx+\frac{a}{3}} \left(f^{\frac{e}{2}}\right)^{-2} \left(f^{-\frac{a}{3}}\right)^{-2} + \frac{1}{2\,bd^2\ln(f)}\sqrt{-cd}\ln\left(f^{bx+\frac{a}{3}} - \frac{1}{d}\sqrt{-cd}\left(f^{\frac{e}{2}}\right)^{-1}\left(f^{-\frac{a}{3}}\right)^{-1}\right)\left(f^{-\frac{a}{3}}\right)^{-3}\left(f^{\frac{e}{2}}\right)^{-3} - \frac{1}{2\,bd^2\ln(f)}\sqrt{-cd}\ln\left(f^{bx+\frac{a}{3}} + \frac{1}{d}\sqrt{-cd}\left(f^{\frac{e}{2}}\right)^{-1}\left(f^{-\frac{a}{3}}\right)^{-1}\right)\left(f^{-\frac{a}{3}}\right)^{-3}\left(f^{\frac{e}{2}}\right)^{-3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(3*b*x+a)/(c+d*f^(2*b*x+e)),x)
```

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

Maxima [A] time = 0.958958, size = 171, normalized size = 1.94

$$-\frac{cf^{a-e}\log\left(\frac{d\left(f^{3\,bx+a}\right)^{\frac{1}{3}}f^{e}-\sqrt{-cdf^{e}}f^{\frac{1}{3}\,a}}{d\left(f^{3\,bx+a}\right)^{\frac{1}{3}}f^{e}+\sqrt{-cdf^{e}}f^{\frac{1}{3}\,a}}\right)}{2\sqrt{-cdf^{e}}bd\log(f)} + \frac{\left(f^{3\,bx+a}\right)^{\frac{1}{3}}f^{\frac{2}{3}\,a-e}}{bd\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(3*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="maxima")
```

```
[Out] -1/2*c*f^(a - e)*log((d*(f^(3*b*x + a))^(1/3)*f^e - sqrt(-c*d*f^e
)*f^(1/3*a))/(d*(f^(3*b*x + a))^(1/3)*f^e + sqrt(-c*d*f^e)*f^(1/3
*a)))/(sqrt(-c*d*f^e)*b*d*log(f)) + (f^(3*b*x + a))^(1/3)*f^(2/3*
a - e)/(b*d*log(f))
```

Fricas [A] time = 0.264311, size = 1, normalized size = 0.01

$$\left[\frac{f^{a-\frac{3}{2}\,e}\sqrt{-\frac{c}{d}}\log\left(-\frac{2\,df^{bx+\frac{1}{2}\,e}\sqrt{-\frac{c}{d}}-df^{2\,bx+e}+c}{df^{2\,bx+e}+c}\right)+2\,f^{bx+\frac{1}{2}\,e}f^{a-\frac{3}{2}\,e}}{2\,bd\log(f)}, -\frac{f^{a-\frac{3}{2}\,e}\sqrt{\frac{c}{d}}\arctan\left(\frac{f^{bx+\frac{1}{2}\,e}}{\sqrt{\frac{c}{d}}}\right)-f^{bx+\frac{1}{2}\,e}f^{a-\frac{3}{2}\,e}}{bd\log(f)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(3*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="fricas")
```

```
[Out] [1/2*(f^(a - 3/2*e)*sqrt(-c/d)*log(-(2*d*f^(b*x + 1/2*e)*sqrt(-c/
d) - d*f^(2*b*x + e) + c)/(d*f^(2*b*x + e) + c)) + 2*f^(b*x + 1/2
*e)*f^(a - 3/2*e))/(b*d*log(f)), -(f^(a - 3/2*e)*sqrt(c/d)*arctan
(f^(b*x + 1/2*e)/sqrt(c/d)) - f^(b*x + 1/2*e)*f^(a - 3/2*e))/(b*d
```

```
*log(f))]
```

Sympy [A] time = 3.67459, size = 253, normalized size = 2.88

$$\begin{cases} \frac{e^{\frac{2a\log(f)}{3}}e^{-e\log(f)}e^{\frac{(a+3bx)\log(f)}{3}}}{bd\log(f)} & \text{for } bde^{e\log(f)}\log(f) \neq 0 \\ \frac{x\left(c^2e^{\frac{10a\log(f)}{3}}+2cde^{\frac{8a\log(f)}{3}}e^{e\log(f)}+d^2e^{2a\log(f)}e^{2e\log(f)}\right)}{c^2de^{\frac{8a\log(f)}{3}}e^{e\log(f)}+2cd^2e^{2a\log(f)}e^{2e\log(f)}+d^3e^{\frac{4a\log(f)}{3}}e^{3e\log(f)}} & \text{otherwise} \end{cases} + \operatorname{RootSum}\left(4z^2b^2d^3e^{3e\log(f)}\log(f)^2+ce^{2a\log(f)}, \left(i\mapsto i\log\left(-2ibde^{-\frac{2a\log(f)}{3}}e^{e\log(f)}\log(f)+e^{\frac{(a+3bx)\log(f)}{3}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(3*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] Piecewise((exp(2*a*log(f)/3)*exp(-e*log(f))*exp((a + 3*b*x)*log(f
)/3)/(b*d*log(f)), Ne(b*d*exp(e*log(f))*log(f), 0)), (x*(c**2*exp
(10*a*log(f)/3) + 2*c*d*exp(8*a*log(f)/3)*exp(e*log(f)) + d**2*ex
p(2*a*log(f))*exp(2*e*log(f)))/(c**2*d*exp(8*a*log(f)/3)*exp(e*lo
g(f)) + 2*c*d**2*exp(2*a*log(f))*exp(2*e*log(f)) + d**3*exp(4*a*l
og(f)/3)*exp(3*e*log(f))), True)) + RootSum(4*_z**2*b**2*d**3*exp
(3*e*log(f))*log(f)**2 + c*exp(2*a*log(f)), Lambda(_i, _i*log(-2*
_i*b*d*exp(-2*a*log(f)/3)*exp(e*log(f))*log(f) + exp((a + 3*b*x)*
log(f)/3))))
```

GIAC/XCAS [A] time = 0.240034, size = 104, normalized size = 1.18

$$-f^a\left(\frac{c\arctan\left(\frac{df^{bx}f^e}{\sqrt{cdf^e}}\right)}{\sqrt{cdf^e}bdf^e\ln(f)}-\frac{f^{bx}}{bdf^e\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(3*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="giac")
```

```
[Out] -f^a*(c*arctan(d*f^(b*x)*f^e/sqrt(c*d*f^e))/(sqrt(c*d*f^e)*b*d*f^
e*ln(f)) - f^(b*x)/(b*d*f^e*ln(f)))
```

3.36 $\int \frac{f^{a+4bx}}{c+df^{e+2bx}}\,dx$

Optimal. Leaf size=61

$$\frac{f^{a+2bx-e}}{2bd\log(f)}-\frac{cf^{a-2e}\log\left(df^{2bx+e}+c\right)}{2bd^2\log(f)}$$

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

Rubi [A] time = 0.107169, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{f^{a+2bx-e}}{2bd\log(f)}-\frac{cf^{a-2e}\log\left(df^{2bx+e}+c\right)}{2bd^2\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + 4*b*x)/(c + d*f^(e + 2*b*x)),x]
```

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

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

$$-\frac{cf^{a-2e}\log\left(c+df^{2bx+e}\right)}{2bd^2\log(f)}+\frac{f^{a-2e}\int^{f^{2bx+e}}\frac{1}{d}\,dx}{2b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(4*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] -c*f**(a - 2*e)*log(c + d*f**(2*b*x + e))/(2*b*d**2*log(f)) + f**
(a - 2*e)*Integral(1/d, (x, f**(2*b*x + e)))/(2*b*log(f))
```

Mathematica [A] time = 0.0348861, size = 48, normalized size = 0.79

$$\frac{f^{a-2e}\left(df^{2bx+e}-c\log\left(df^{2bx+e}+c\right)\right)}{2bd^2\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + 4*b*x)/(c + d*f^(e + 2*b*x)),x]
```

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

Maple [A] time = 0.024, size = 76, normalized size = 1.3

$$\frac{e^{(2\,bx+e)\ln(f)}}{2\,(f^e)^2\ln(f)\,bd}\left(f^{\frac{a}{2}}\right)^2-\frac{c\ln\left(c+de^{(2\,bx+e)\ln(f)}\right)}{2\,d^2b\ln(f)\,(f^e)^2}\left(f^{\frac{a}{2}}\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(4*b*x+a)/(c+d*f^(2*b*x+e)),x)
```

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

Maxima [A] time = 0.793796, size = 112, normalized size = 1.84

$$-\frac{cf^{a-2\,e}\log\left(d\sqrt{f^{4\,bx+a}}f^{-\frac{1}{2}\,a+e}+c\right)}{2\,bd^2\log\left(f\right)}+\frac{\left(d\sqrt{f^{4\,bx+a}}f^{-\frac{1}{2}\,a+e}+c\right)f^{a-2\,e}}{2\,bd^2\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(4*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="maxima")
```

```
[Out] -1/2*c*f^(a - 2*e)*log(d*sqrt(f^(4*b*x + a))*f^(-1/2*a + e) + c)/
(b*d^2*log(f)) + 1/2*(d*sqrt(f^(4*b*x + a))*f^(-1/2*a + e) + c)*f
^(a - 2*e)/(b*d^2*log(f))
```

Fricas [A] time = 0.257692, size = 72, normalized size = 1.18

$$\frac{df^{2\,bx+e}f^{a-2\,e}-cf^{a-2\,e}\log\left(df^{2\,bx+e}+c\right)}{2\,bd^2\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(4*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="fricas")
```

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

Sympy [A] time = 2.85403, size = 218, normalized size = 3.57

$$\begin{cases}\frac{e^{\frac{a\log(f)}{2}}e^{-e\log(f)}\sqrt{e^{(a+4bx)\log(f)}}}{2bd\log(f)} & \text{for}\ 2bde^{e\log(f)}\log(f)\neq 0\\ \frac{x\left(c^2e^{\frac{3a\log(f)}{2}}+2cde^{a\log(f)}e^{e\log(f)}+d^2e^{\frac{a\log(f)}{2}}e^{2e\log(f)}\right)}{c^2de^{a\log(f)}e^{e\log(f)}+2cd^2e^{\frac{a\log(f)}{2}}e^{2e\log(f)}+d^3e^{3e\log(f)}} & \text{otherwise}\end{cases}-\frac{ce^{(a-2e)\log(f)}\log\left(\frac{ce^{\frac{a\log(f)}{2}}e^{-e\log(f)}}{d}+\sqrt{e^{(a+4bx)\log(f)}}\right)}{2bd^2\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(4*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] Piecewise((exp(a*log(f)/2)*exp(-e*log(f))*sqrt(exp((a + 4*b*x)*lo
g(f)))/(2*b*d*log(f)), Ne(2*b*d*exp(e*log(f))*log(f), 0)), (x*(c*
*2*exp(3*a*log(f)/2) + 2*c*d*exp(a*log(f))*exp(e*log(f)) + d**2*e
xp(a*log(f)/2)*exp(2*e*log(f)))/(c**2*d*exp(a*log(f))*exp(e*log(f
)) + 2*c*d**2*exp(a*log(f)/2)*exp(2*e*log(f)) + d**3*exp(3*e*log(
f))), True)) - c*exp((a - 2*e)*log(f))*log(c*exp(a*log(f)/2)*exp(
-e*log(f))/d + sqrt(exp((a + 4*b*x)*log(f))))/(2*b*d**2*log(f))
```

GIAC/XCAS [A] time = 0.242843, size = 89, normalized size = 1.46

$$\frac{1}{2} f^{a} \left(\frac{f^{2\,bx}}{bdf^{e}\ln\left(f\right)} - \frac{c\ln\left(\left|df^{2\,bx}f^{e}+c\right|\right)}{bd^{2}f^{2\,e}\ln\left(f\right)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(4*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="giac")
```

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

3.37 $\int \frac{f^{a+5bx}}{c+df^{e+2bx}}\,dx$

Optimal. Leaf size=127

$$\frac{c^{3/2}f^{a-\frac{5e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{\frac{1}{2}(2bx+e)}}{\sqrt{c}}\right)}{bd^{5/2}\log(f)}-\frac{cf^{\frac{1}{2}(2a-5e)+\frac{1}{2}(2bx+e)}}{bd^2\log(f)}+\frac{f^{\frac{1}{2}(2a-5e)+\frac{3}{2}(2bx+e)}}{3bd\log(f)}$$

```
[Out] -((c*f^((2*a - 5*e)/2 + (e + 2*b*x)/2))/(b*d^2*Log[f])) + f^((2*a
 - 5*e)/2 + (3*(e + 2*b*x))/2)/(3*b*d*Log[f]) + (c^(3/2)*f^(a - (
5*e)/2)*ArcTan[(Sqrt[d]*f^((e + 2*b*x)/2))/Sqrt[c]])/(b*d^(5/2)*L
og[f])
```

Rubi [A] time = 0.156062, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13

$$\frac{c^{3/2}f^{a-\frac{5e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{\frac{1}{2}(2bx+e)}}{\sqrt{c}}\right)}{bd^{5/2}\log(f)}-\frac{cf^{\frac{1}{2}(2a-5e)+\frac{1}{2}(2bx+e)}}{bd^2\log(f)}+\frac{f^{\frac{1}{2}(2a-5e)+\frac{3}{2}(2bx+e)}}{3bd\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + 5*b*x)/(c + d*f^(e + 2*b*x)),x]
```

```
[Out] -((c*f^((2*a - 5*e)/2 + (e + 2*b*x)/2))/(b*d^2*Log[f])) + f^((2*a
 - 5*e)/2 + (3*(e + 2*b*x))/2)/(3*b*d*Log[f]) + (c^(3/2)*f^(a - (
5*e)/2)*ArcTan[(Sqrt[d]*f^((e + 2*b*x)/2))/Sqrt[c]])/(b*d^(5/2)*L
og[f])
```

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

$$\frac{c^{\frac{3}{2}}f^{a-\frac{5e}{2}}\operatorname{atan}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)}{bd^{\frac{5}{2}}\log(f)}+\frac{f^{a-\frac{5e}{2}}f^{3bx+\frac{3e}{2}}}{3bd\log(f)}-\frac{f^{a-\frac{5e}{2}}\int^{f^{bx+\frac{e}{2}}}c\,dx}{bd^2\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(5*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] c**(3/2)*f**(a - 5*e/2)*atan(sqrt(d)*f**(b*x + e/2)/sqrt(c))/(b*d
**(5/2)*log(f)) + f**(a - 5*e/2)*f**(3*b*x + 3*e/2)/(3*b*d*log(f)
) - f**(a - 5*e/2)*Integral(c, (x, f**(b*x + e/2)))/(b*d**2*log(f
))
```

Mathematica [A] time = 0.0973279, size = 86, normalized size = 0.68

$$\frac{3c^{3/2}f^{a-\frac{5e}{2}}\tan^{-1}\left(\frac{\sqrt{d}f^{bx+\frac{e}{2}}}{\sqrt{c}}\right)+\sqrt{d}f^{a+bx-2e}\left(df^{2bx+e}-3c\right)}{3bd^{5/2}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + 5*b*x)/(c + d*f^(e + 2*b*x)),x]
```

```
[Out] (Sqrt[d]*f^(a - 2*e + b*x)*(-3*c + d*f^(e + 2*b*x)) + 3*c^(3/2)*f
^(a - (5*e)/2)*ArcTan[(Sqrt[d]*f^(e/2 + b*x))/Sqrt[c]])/(3*b*d^(5
/2)*Log[f])
```

Maple [B] time = 0.096, size = 212, normalized size = 1.7

$$\frac{1}{3\ln(f)bd}\left(f^{bx+\frac{a}{5}}\right)^{3}\left(f^{-\frac{a}{5}}\right)^{-2}\left(f^{\frac{e}{2}}\right)^{-2}-\frac{c}{d^{2}\ln(f)b}f^{bx+\frac{a}{5}}\left(f^{-\frac{a}{5}}\right)^{-4}\left(f^{\frac{e}{2}}\right)^{-4}+\frac{c}{2bd^{3}\ln(f)}\sqrt{-cd}\ln\left(f^{bx+\frac{a}{5}}+\frac{1}{d}\sqrt{-cd}\left(f^{\frac{e}{2}}\right)^{-1}\left(f^{-\frac{a}{5}}\right)^{-1}\right)\left(f^{\frac{e}{2}}\right)^{-5}\left(f^{-\frac{a}{5}}\right)^{-5}-\frac{c}{2bd^{3}\ln(f)}\sqrt{-cd}\ln\left(f^{bx+\frac{a}{5}}-\frac{1}{d}\sqrt{-cd}\left(f^{\frac{e}{2}}\right)^{-1}\left(f^{-\frac{a}{5}}\right)^{-1}\right)\left(f^{\frac{e}{2}}\right)^{-5}\left(f^{-\frac{a}{5}}\right)^{-5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(5*b*x+a)/(c+d*f^(2*b*x+e)),x)
```

```
[Out] 1/3/(f^(-1/5*a))^2/(f^(1/2*e))^2/d/ln(f)/b*(f^(b*x+1/5*a))^3-c/(f
^(-1/5*a))^4/(f^(1/2*e))^4/d^2/ln(f)/b*f^(b*x+1/5*a)+1/2/d^3*(-c*
d)^(1/2)*c/b/(f^(1/2*e))^5/ln(f)/(f^(-1/5*a))^5*ln(f^(b*x+1/5*a)+
1/d*(-c*d)^(1/2)/(f^(1/2*e))/(f^(-1/5*a)))-1/2/d^3*(-c*d)^(1/2)*c
/b/(f^(1/2*e))^5/ln(f)/(f^(-1/5*a))^5*ln(f^(b*x+1/5*a)-1/d*(-c*d)
^(1/2)/(f^(1/2*e))/(f^(-1/5*a)))
```

Maxima [A] time = 0.87921, size = 211, normalized size = 1.66

$$\frac{c^{2}f^{a-2e}\log\left(\frac{d\left(f^{5bx+a}\right)^{\frac{1}{5}}f^{e}-\sqrt{-cdf^{e}}f^{\frac{1}{5}a}}{d\left(f^{5bx+a}\right)^{\frac{1}{5}}f^{e}+\sqrt{-cdf^{e}}f^{\frac{1}{5}a}}\right)}{2\sqrt{-cdf^{e}}bd^{2}\log(f)}+\frac{d\left(f^{5bx+a}\right)^{\frac{3}{5}}f^{\frac{2}{5}a+e}-3c\left(f^{5bx+a}\right)^{\frac{1}{5}}f^{\frac{4}{5}a}}{3bd^{2}f^{2e}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(5*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="maxima")
```

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

Fricas [A] time = 0.257442, size = 1, normalized size = 0.01

$$\left[\frac{3cf^{a-\frac{5}{2}e}\sqrt{-\frac{c}{d}}\log\left(\frac{2df^{bx+\frac{1}{2}e}\sqrt{-\frac{c}{d}}+df^{2bx+e}-c}{df^{2bx+e}+c}\right)+2df^{3bx+\frac{3}{2}e}f^{a-\frac{5}{2}e}-6cf^{bx+\frac{1}{2}e}f^{a-\frac{5}{2}e}}{6bd^{2}\log(f)},\frac{3cf^{a-\frac{5}{2}e}\sqrt{\frac{c}{d}}\arctan\left(\frac{f^{bx+\frac{1}{2}e}}{\sqrt{\frac{c}{d}}}\right)+df}{3bd^{2}\mathrm{lc}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(5*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="fricas")
```

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

```
d^2*log(f)), 1/3*(3*c*f^(a - 5/2*e)*sqrt(c/d)*arctan(f^(b*x + 1/2
*e)/sqrt(c/d)) + d*f^(3*b*x + 3/2*e)*f^(a - 5/2*e) - 3*c*f^(b*x +
 1/2*e)*f^(a - 5/2*e))/(b*d^2*log(f))]
```

Sympy [A] time = 4.25081, size = 366, normalized size = 2.88

$$\begin{cases} \frac{\left(-3bcde^{\frac{4a\log(f)}{5}}e^{e\log(f)}e^{\frac{(a+5bx)\log(f)}{5}}\log(f)+bd^2e^{\frac{2a\log(f)}{5}}e^{2e\log(f)}e^{\frac{3(a+5bx)\log(f)}{5}}\log(f)\right)e^{-3e\log(f)}}{3b^2d^3\log(f)^2} & \text{for } 3b^2d^3e^{3e\log(f)}\log(f)^2 \neq 0 \\ -\frac{x\left(c^3e^{\frac{16a\log(f)}{5}}+c^2de^{\frac{14a\log(f)}{5}}e^{e\log(f)}-cd^2e^{\frac{12a\log(f)}{5}}e^{2e\log(f)}-d^3e^{2a\log(f)}e^{3e\log(f)}\right)}{c^2d^2e^{\frac{12a\log(f)}{5}}e^{2e\log(f)}+2cd^3e^{2a\log(f)}e^{3e\log(f)}+d^4e^{\frac{8a\log(f)}{5}}e^{4e\log(f)}} & \text{otherwise} \end{cases}$$
$$+\operatorname{RootSum}\left(4z^2b^2d^5e^{5e\log(f)}\log(f)^2+c^3e^{2a\log(f)},\left(i\mapsto i\log\left(\frac{2ibd^2e^{-\frac{4a\log(f)}{5}}e^{2e\log(f)}\log(f)}{c}+e^{\frac{(a+5bx)\log(f)}{5}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(5*b*x+a)/(c+d*f**(2*b*x+e)),x)
```

```
[Out] Piecewise(((-3*b*c*d*exp(4*a*log(f)/5)*exp(e*log(f))*exp((a + 5*b
*x)*log(f)/5)*log(f) + b*d**2*exp(2*a*log(f)/5)*exp(2*e*log(f))*e
xp(3*(a + 5*b*x)*log(f)/5)*log(f))*exp(-3*e*log(f))/(3*b**2*d**3*
log(f)**2), Ne(3*b**2*d**3*exp(3*e*log(f))*log(f)**2, 0)), (-x*(c
**3*exp(16*a*log(f)/5) + c**2*d*exp(14*a*log(f)/5)*exp(e*log(f))
- c*d**2*exp(12*a*log(f)/5)*exp(2*e*log(f)) - d**3*exp(2*a*log(f)
)*exp(3*e*log(f)))/(c**2*d**2*exp(12*a*log(f)/5)*exp(2*e*log(f))
+ 2*c*d**3*exp(2*a*log(f))*exp(3*e*log(f)) + d**4*exp(8*a*log(f)/
5)*exp(4*e*log(f))), True)) + RootSum(4*_z**2*b**2*d**5*exp(5*e*l
og(f))*log(f)**2 + c**3*exp(2*a*log(f)), Lambda(_i, _i*log(2*_i*b
*d**2*exp(-4*a*log(f)/5)*exp(2*e*log(f))*log(f)/c + exp((a + 5*b*
x)*log(f)/5))))
```

GIAC/XCAS [A] time = 0.236939, size = 165, normalized size = 1.3

$$\frac{1}{3}f^a\left(\frac{3c^2\arctan\left(\frac{df^{bx}f^e}{\sqrt{cdf^e}}\right)}{\sqrt{cdf^e}bd^2f^{2e}\ln(f)}+\frac{b^2d^2f^{3bx}f^{2e}\ln(f)^2-3b^2cdf^{bx}f^e\ln(f)^2}{b^3d^3f^{3e}\ln(f)^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(5*b*x + a)/(d*f^(2*b*x + e) + c),x, algorithm="giac")
```

```
[Out] 1/3*f^a*(3*c^2*arctan(d*f^(b*x)*f^e/sqrt(c*d*f^e))/(sqrt(c*d*f^e)
*b*d^2*f^(2*e)*ln(f)) + (b^2*d^2*f^(3*b*x)*f^(2*e)*ln(f)^2 - 3*b^
2*c*d*f^(b*x)*f^e*ln(f)^2)/(b^3*d^3*f^(3*e)*ln(f)^3))
```

3.38 $\int \frac{e^x}{1+e^{2x}} \, dx$

Optimal. Leaf size=4

$$\tan^{-1}\left(e^x\right)$$

```
[Out] ArcTan[E^x]
```

Rubi [A] time = 0.0280155, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\tan^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(1 + E^(2*x)),x]

[Out] ArcTan[E^x]
```

Rubi in Sympy [A] time = 5.36597, size = 3, normalized size = 0.75

$$\operatorname{atan}\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1+exp(2*x)),x)

[Out] atan(exp(x))
```

Mathematica [A] time = 0.0264812, size = 4, normalized size = 1.

$$\tan^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(1 + E^(2*x)),x]

[Out] ArcTan[E^x]
```

Maple [A] time = 0.005, size = 4, normalized size = 1.

$$\arctan\left(\mathrm{e}^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1+exp(2*x)),x)

[Out] arctan(exp(x))
```

<u>Maxima</u> [A] time = 0.961732, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 1),x, algorithm="maxima")
```

```
[Out] arctan(e^x)
```

<u>Fricas</u> [A] time = 0.233796, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 1),x, algorithm="fricas")
```

```
[Out] arctan(e^x)
```

<u>Sympy</u> [A] time = 0.187649, size = 15, normalized size = 3.75

$$\operatorname{RootSum}\left(4z^{2} + 1, \left(i \mapsto i \log\left(2i + e^{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1+exp(2*x)),x)
```

```
[Out] RootSum(4*_z**2 + 1, Lambda(_i, _i*log(2*_i + exp(x))))
```

<u>GIAC/XCAS</u> [A] time = 0.234725, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 1),x, algorithm="giac")
```

```
[Out] arctan(e^x)
```

3.39 $\int \frac{e^x}{1-e^{2x}}\,dx$

Optimal. Leaf size=4

$$\tanh^{-1}\left(e^x\right)$$

```
[Out] ArcTanh[E^x]
```

Rubi [A] time = 0.030984, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\tanh^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(1 - E^(2*x)),x]

[Out] ArcTanh[E^x]
```

Rubi in Sympy [A] time = 7.60529, size = 3, normalized size = 0.75

$$\operatorname{atanh}\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1-exp(2*x)),x)

[Out] atanh(exp(x))
```

Mathematica [B] time = 0.00586049, size = 23, normalized size = 5.75

$$\frac{1}{2}\log\left(e^x+1\right)-\frac{1}{2}\log\left(1-e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(1 - E^(2*x)),x]

[Out] -Log[1 - E^x]/2 + Log[1 + E^x]/2
```

Maple [A] time = 0.003, size = 4, normalized size = 1.

$$\mathit{Artanh}\left(\mathrm{e}^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1-exp(2*x)),x)

[Out] arctanh(exp(x))
```

Maxima [A] time = 0.780925, size = 20, normalized size = 5.

$$\frac{1}{2} \log \left(e^{x} + 1\right) - \frac{1}{2} \log \left(e^{x} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 1),x, algorithm="maxima")

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

Fricas [A] time = 0.235711, size = 20, normalized size = 5.

$$\frac{1}{2} \log \left(e^{x} + 1\right) - \frac{1}{2} \log \left(e^{x} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 1),x, algorithm="fricas")

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

Sympy [A] time = 0.181508, size = 15, normalized size = 3.75

$$-\frac{\log \left(e^{x} - 1\right)}{2} + \frac{\log \left(e^{x} + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1-exp(2*x)),x)

[Out] -log(exp(x) - 1)/2 + log(exp(x) + 1)/2
```

GIAC/XCAS [A] time = 0.248914, size = 22, normalized size = 5.5

$$\frac{1}{2} \ln \left(e^{x} + 1\right) - \frac{1}{2} \ln \left(|e^{x} - 1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 1),x, algorithm="giac")

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

3.40 $\int \frac{e^x x}{1-e^{2x}}\,dx$

Optimal. Leaf size=27

$$\frac{1}{2}\text{PolyLog}(2,-e^x)-\frac{1}{2}\text{PolyLog}(2,e^x)+x\tanh^{-1}(e^x)$$

```
[Out] x*ArcTanh[E^x] + PolyLog[2, -E^x]/2 - PolyLog[2, E^x]/2
```

Rubi [A] time = 0.088203, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312

$$\frac{1}{2}\text{PolyLog}(2,-e^x)-\frac{1}{2}\text{PolyLog}(2,e^x)+x\tanh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In] Int[(E^x*x)/(1 - E^(2*x)),x]
```

```
[Out] x*ArcTanh[E^x] + PolyLog[2, -E^x]/2 - PolyLog[2, E^x]/2
```

Rubi in Sympy [A] time = 17.6102, size = 20, normalized size = 0.74

$$x\,\text{atanh}(e^x)+\frac{\text{Li}_2(-e^x)}{2}-\frac{\text{Li}_2(e^x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)*x/(1-exp(2*x)),x)
```

```
[Out] x*atanh(exp(x)) + polylog(2, -exp(x))/2 - polylog(2, exp(x))/2
```

Mathematica [A] time = 0.0234519, size = 38, normalized size = 1.41

$$\frac{1}{2}\left(\text{PolyLog}(2,-e^x)-\text{PolyLog}(2,e^x)+x\left(\log(e^x+1)-\log(1-e^x)\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(E^x*x)/(1 - E^(2*x)),x]
```

```
[Out] (x*(-Log[1 - E^x] + Log[1 + E^x]) + PolyLog[2, -E^x] - PolyLog[2,
 E^x])/2
```

Maple [A] time = 0.012, size = 34, normalized size = 1.3

$$\frac{x\ln(1+e^x)}{2}+\frac{\mathit{polylog}(2,-e^x)}{2}-\frac{x\ln(1-e^x)}{2}-\frac{\mathit{polylog}(2,e^x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)*x/(1-exp(2*x)),x)
```

```
[Out] 1/2*x*ln(1+exp(x))+1/2*polylog(2,-exp(x))-1/2*x*ln(1-exp(x))-1/2*
polylog(2,exp(x))
```

Maxima [A] time = 0.83287, size = 42, normalized size = 1.56

$$\frac{1}{2}\,x\log\left(e^{x}+1\right)-\frac{1}{2}\,x\log\left(-e^{x}+1\right)+\frac{1}{2}\,\mathrm{Li}_{2}\left(-e^{x}\right)-\frac{1}{2}\,\mathrm{Li}_{2}\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x*e^x/(e^(2*x) - 1),x, algorithm="maxima")
```

```
[Out] 1/2*x*log(e^x + 1) - 1/2*x*log(-e^x + 1) + 1/2*dilog(-e^x) - 1/2*
dilog(e^x)
```

Fricas [A] time = 0.252286, size = 42, normalized size = 1.56

$$\frac{1}{2}\,x\log\left(e^{x}+1\right)-\frac{1}{2}\,x\log\left(-e^{x}+1\right)+\frac{1}{2}\,\mathrm{Li}_{2}\left(-e^{x}\right)-\frac{1}{2}\,\mathrm{Li}_{2}\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x*e^x/(e^(2*x) - 1),x, algorithm="fricas")
```

```
[Out] 1/2*x*log(e^x + 1) - 1/2*x*log(-e^x + 1) + 1/2*dilog(-e^x) - 1/2*
dilog(e^x)
```

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

$$-\int\frac{xe^{x}}{e^{2x}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*x/(1-exp(2*x)),x)
```

```
[Out] -Integral(x*exp(x)/(exp(2*x) - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int-\frac{xe^{x}}{e^{(2\,x)}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x*e^x/(e^(2*x) - 1),x, algorithm="giac")
```

```
[Out] integrate(-x*e^x/(e^(2*x) - 1), x)
```

3.41 $\int \frac{e^x x^2}{1-e^{2x}}\, dx$

Optimal. Leaf size=40

$$x\text{PolyLog}\left(2,-e^x\right)-x\text{PolyLog}\left(2,e^x\right)-\text{PolyLog}\left(3,-e^x\right)+\text{PolyLog}\left(3,e^x\right)+x^2\tanh^{-1}\left(e^x\right)$$

```
[Out] x^2*ArcTanh[E^x] + x*PolyLog[2, -E^x] - x*PolyLog[2, E^x] - PolyL
og[3, -E^x] + PolyLog[3, E^x]
```

Rubi [A] time = 0.152434, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389

$$x\text{PolyLog}\left(2,-e^x\right)-x\text{PolyLog}\left(2,e^x\right)-\text{PolyLog}\left(3,-e^x\right)+\text{PolyLog}\left(3,e^x\right)+x^2\tanh^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x*x^2)/(1 - E^(2*x)),x]
```

```
[Out] x^2*ArcTanh[E^x] + x*PolyLog[2, -E^x] - x*PolyLog[2, E^x] - PolyL
og[3, -E^x] + PolyLog[3, E^x]
```

Rubi in Sympy [A] time = 22.2041, size = 34, normalized size = 0.85

$$x^2\,\text{atanh}\left(e^x\right)+x\,\text{Li}_2\left(-e^x\right)-x\,\text{Li}_2\left(e^x\right)-\text{Li}_3\left(-e^x\right)+\text{Li}_3\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*x**2/(1-exp(2*x)),x)
```

```
[Out] x**2*atanh(exp(x)) + x*polylog(2, -exp(x)) - x*polylog(2, exp(x))
 - polylog(3, -exp(x)) + polylog(3, exp(x))
```

Mathematica [A] time = 0.02467, size = 60, normalized size = 1.5

$$x\text{PolyLog}\left(2,-e^x\right)-x\text{PolyLog}\left(2,e^x\right)-\text{PolyLog}\left(3,-e^x\right)+\text{PolyLog}\left(3,e^x\right)-\frac{1}{2}x^2\log\left(1-e^x\right)+\frac{1}{2}x^2\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x*x^2)/(1 - E^(2*x)),x]
```

```
[Out] -(x^2*Log[1 - E^x])/2 + (x^2*Log[1 + E^x])/2 + x*PolyLog[2, -E^x]
 - x*PolyLog[2, E^x] - PolyLog[3, -E^x] + PolyLog[3, E^x]
```

Maple [A] time = 0.01, size = 51, normalized size = 1.3

$$\frac{x^2\ln\left(1+e^x\right)}{2}+x\,polylog\left(2,-e^x\right)-polylog\left(3,-e^x\right)-\frac{x^2\ln\left(1-e^x\right)}{2}-x\,polylog\left(2,e^x\right)+polylog\left(3,e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*x^2/(1-exp(2*x)),x)
```

```
[Out] 1/2*x^2*ln(1+exp(x))+x*polylog(2,-exp(x))-polylog(3,-exp(x))-1/2*
x^2*ln(1-exp(x))-x*polylog(2,exp(x))+polylog(3,exp(x))
```

Maxima [A] time = 0.802004, size = 65, normalized size = 1.62

$$\frac{1}{2}x^2\log\left(e^x+1\right)-\frac{1}{2}x^2\log\left(-e^x+1\right)+x\mathrm{Li}_2\left(-e^x\right)-x\mathrm{Li}_2\left(e^x\right)-\mathrm{Li}_3(-e^x)+\mathrm{Li}_3(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^2*e^x/(e^(2*x) - 1),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*log(e^x + 1) - 1/2*x^2*log(-e^x + 1) + x*dilog(-e^x) - x*
dilog(e^x) - polylog(3, -e^x) + polylog(3, e^x)
```

Fricas [A] time = 0.255635, size = 65, normalized size = 1.62

$$\frac{1}{2}x^2\log\left(e^x+1\right)-\frac{1}{2}x^2\log\left(-e^x+1\right)+x\mathrm{Li}_2\left(-e^x\right)-x\mathrm{Li}_2\left(e^x\right)-\mathrm{Li}_3(-e^x)+\mathrm{Li}_3(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^2*e^x/(e^(2*x) - 1),x, algorithm="fricas")
```

```
[Out] 1/2*x^2*log(e^x + 1) - 1/2*x^2*log(-e^x + 1) + x*dilog(-e^x) - x*
dilog(e^x) - polylog(3, -e^x) + polylog(3, e^x)
```

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

$$-\int\frac{x^2e^x}{e^{2x}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*x**2/(1-exp(2*x)),x)
```

```
[Out] -Integral(x**2*exp(x)/(exp(2*x) - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int-\frac{x^2e^x}{e^{(2x)}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^2*e^x/(e^(2*x) - 1),x, algorithm="giac")
```

```
[Out] integrate(-x^2*e^x/(e^(2*x) - 1), x)
```

3.42 $\int \frac{e^x x^3}{1-e^{2x}}\,dx$

Optimal. Leaf size=69

$$\frac{3}{2}x^2\text{PolyLog}\left(2,-e^x\right)-\frac{3}{2}x^2\text{PolyLog}\left(2,e^x\right)-3x\text{PolyLog}\left(3,-e^x\right)+3x\text{PolyLog}\left(3,e^x\right)+3\text{PolyLog}\left(4,-e^x\right)-3\text{PolyLog}\left(4,e^x\right)+x^3\tanh^{-1}\left(e^x\right)$$

```
[Out] x^3*ArcTanh[E^x] + (3*x^2*PolyLog[2, -E^x])/2 - (3*x^2*PolyLog[2,
 E^x])/2 - 3*x*PolyLog[3, -E^x] + 3*x*PolyLog[3, E^x] + 3*PolyLog
[4, -E^x] - 3*PolyLog[4, E^x]
```

Rubi [A] time = 0.190308, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444

$$\frac{3}{2}x^2\text{PolyLog}\left(2,-e^x\right)-\frac{3}{2}x^2\text{PolyLog}\left(2,e^x\right)-3x\text{PolyLog}\left(3,-e^x\right)+3x\text{PolyLog}\left(3,e^x\right)+3\text{PolyLog}\left(4,-e^x\right)-3\text{PolyLog}\left(4,e^x\right)+x^3\tanh^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x*x^3)/(1 - E^(2*x)),x]
```

```
[Out] x^3*ArcTanh[E^x] + (3*x^2*PolyLog[2, -E^x])/2 - (3*x^2*PolyLog[2,
 E^x])/2 - 3*x*PolyLog[3, -E^x] + 3*x*PolyLog[3, E^x] + 3*PolyLog
[4, -E^x] - 3*PolyLog[4, E^x]
```

Rubi in Sympy [A] time = 25.3148, size = 66, normalized size = 0.96

$$x^3\operatorname{atanh}\left(e^x\right)+\frac{3x^2\operatorname{Li}_2\left(-e^x\right)}{2}-\frac{3x^2\operatorname{Li}_2\left(e^x\right)}{2}-3x\operatorname{Li}_3\left(-e^x\right)+3x\operatorname{Li}_3\left(e^x\right)+3\operatorname{Li}_4\left(-e^x\right)-3\operatorname{Li}_4\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*x**3/(1-exp(2*x)),x)
```

```
[Out] x**3*atanh(exp(x)) + 3*x**2*polylog(2, -exp(x))/2 - 3*x**2*polylo
g(2, exp(x))/2 - 3*x*polylog(3, -exp(x)) + 3*x*polylog(3, exp(x))
 + 3*polylog(4, -exp(x)) - 3*polylog(4, exp(x))
```

Mathematica [A] time = 0.0273486, size = 84, normalized size = 1.22

$$\frac{1}{2}\left(3x^2\text{PolyLog}\left(2,-e^x\right)-3x^2\text{PolyLog}\left(2,e^x\right)-6x\text{PolyLog}\left(3,-e^x\right)+6x\text{PolyLog}\left(3,e^x\right)+6\text{PolyLog}\left(4,-e^x\right)-6\text{PolyLog}\left(4,e^x\right)+x^3\left(-\log\left(1-e^x\right)\right)+x^3\log\left(e^x+1\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x*x^3)/(1 - E^(2*x)),x]
```

```
[Out] (-(x^3*Log[1 - E^x]) + x^3*Log[1 + E^x] + 3*x^2*PolyLog[2, -E^x]
- 3*x^2*PolyLog[2, E^x] - 6*x*PolyLog[3, -E^x] + 6*x*PolyLog[3, E
^x] + 6*PolyLog[4, -E^x] - 6*PolyLog[4, E^x])/2
```

Maple [A] time = 0.01, size = 74, normalized size = 1.1

$$\frac{x^3 \ln(1+e^x)}{2} + \frac{3x^2 polylog(2,-e^x)}{2} - 3x polylog(3,-e^x) + 3\, polylog(4,-e^x) - \frac{x^3 \ln(1-e^x)}{2} - \frac{3x^2 polylog(2,e^x)}{2} + 3x polylog(3,e^x) - 3\, polylog(4,e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*x^3/(1-exp(2*x)),x)
```

```
[Out] 1/2*x^3*ln(1+exp(x))+3/2*x^2*polylog(2,-exp(x))-3*x*polylog(3,-ex
p(x))+3*polylog(4,-exp(x))-1/2*x^3*ln(1-exp(x))-3/2*x^2*polylog(2
,exp(x))+3*x*polylog(3,exp(x))-3*polylog(4,exp(x))
```

Maxima [A] time = 0.816732, size = 96, normalized size = 1.39

$$\frac{1}{2}x^3\log(e^x+1) - \frac{1}{2}x^3\log(-e^x+1) + \frac{3}{2}x^2\mathrm{Li}_2(-e^x) - \frac{3}{2}x^2\mathrm{Li}_2(e^x) - 3x\mathrm{Li}_3(-e^x) + 3x\mathrm{Li}_3(e^x) + 3\,\mathrm{Li}_4(-e^x) - 3\,\mathrm{Li}_4(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^3*e^x/(e^(2*x) - 1),x, algorithm="maxima")
```

```
[Out] 1/2*x^3*log(e^x + 1) - 1/2*x^3*log(-e^x + 1) + 3/2*x^2*dilog(-e^x
) - 3/2*x^2*dilog(e^x) - 3*x*polylog(3, -e^x) + 3*x*polylog(3, e^
x) + 3*polylog(4, -e^x) - 3*polylog(4, e^x)
```

Fricas [A] time = 0.260171, size = 96, normalized size = 1.39

$$\frac{1}{2}x^3\log(e^x+1) - \frac{1}{2}x^3\log(-e^x+1) + \frac{3}{2}x^2\mathrm{Li}_2(-e^x) - \frac{3}{2}x^2\mathrm{Li}_2(e^x) - 3x\mathrm{Li}_3(-e^x) + 3x\mathrm{Li}_3(e^x) + 3\,\mathrm{Li}_4(-e^x) - 3\,\mathrm{Li}_4(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^3*e^x/(e^(2*x) - 1),x, algorithm="fricas")
```

```
[Out] 1/2*x^3*log(e^x + 1) - 1/2*x^3*log(-e^x + 1) + 3/2*x^2*dilog(-e^x
) - 3/2*x^2*dilog(e^x) - 3*x*polylog(3, -e^x) + 3*x*polylog(3, e^
x) + 3*polylog(4, -e^x) - 3*polylog(4, e^x)
```

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

$$-\int \frac{x^3 e^x}{e^{2x}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*x**3/(1-exp(2*x)),x)
```

```
[Out] -Integral(x**3*exp(x)/(exp(2*x) - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{x^3 e^x}{e^{(2x)} - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^3*e^x/(e^(2*x) - 1),x, algorithm="giac")
```

```
[Out] integrate(-x^3*e^x/(e^(2*x) - 1), x)
```

3.43 $\int \frac{f^x}{a+bf^{2x}}\,dx$

Optimal. Leaf size=30

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[f])
```

Rubi [A] time = 0.0662554, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^x/(a + b*f^(2*x)),x]
```

```
[Out] ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[f])
```

Rubi in Sympy [A] time = 13.0634, size = 27, normalized size = 0.9

$$\frac{\operatorname{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x/(a+b*f**(2*x)),x)
```

```
[Out] atan(sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f))
```

Mathematica [A] time = 0.0123331, size = 30, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^x/(a + b*f^(2*x)),x]
```

```
[Out] ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[f])
```

Maple [B] time = 0.04, size = 53, normalized size = 1.8

$$-\frac{1}{2\ln(f)}\ln\left(f^x - a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}} + \frac{1}{2\ln(f)}\ln\left(f^x + a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x/(a+b*f^(2*x)),x)
```

```
[Out] -1/2/(-a*b)^(1/2)/ln(f)*ln(f^x-1/(-a*b)^(1/2)*a)+1/2/(-a*b)^(1/2)
/ln(f)*ln(f^x+1/(-a*b)^(1/2)*a)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.258013, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\,abf^x+\sqrt{-ab}bf^{2\,x}-\sqrt{-ab}a}{bf^{2\,x}+a}\right)}{2\,\sqrt{-ab}\log\left(f\right)}, -\frac{\arctan\left(\frac{a}{\sqrt{ab}f^x}\right)}{\sqrt{ab}\log\left(f\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a),x, algorithm="fricas")
```

```
[Out] [1/2*log((2*a*b*f^x + sqrt(-a*b)*b*f^(2*x) - sqrt(-a*b)*a)/(b*f^(
2*x) + a))/(sqrt(-a*b)*log(f)), -arctan(a/(sqrt(a*b)*f^x))/(sqrt(
a*b)*log(f))]
```

Sympy [A] time = 0.415951, size = 24, normalized size = 0.8

$$\frac{\operatorname{RootSum}\left(4z^2ab+1,\left(i\mapsto i\log\left(2ia+f^x\right)\right)\right)}{\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x/(a+b*f**(2*x)),x)
```

```
[Out] RootSum(4*_z**2*a*b + 1, Lambda(_i, _i*log(2*_i*a + f**x)))/log(f
)
```

GIAC/XCAS [A] time = 0.242666, size = 28, normalized size = 0.93

$$\frac{\arctan\left(\frac{bf^x}{\sqrt{ab}}\right)}{\sqrt{ab}\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a),x, algorithm="giac")
```

```
[Out] arctan(b*f^x/sqrt(a*b))/(sqrt(a*b)*ln(f))
```

3.44 $\int \frac{f^x x}{a+bf^{2x}}\,dx$

Optimal. Leaf size=110

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] (x*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((I/
2)*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + ((I/2)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[
b]*Log[f]^2)
```

Rubi [A] time = 0.187996, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x)/(a + b*f^(2*x)),x]
```

```
[Out] (x*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((I/
2)*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + ((I/2)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[
b]*Log[f]^2)
```

Rubi in Sympy [A] time = 39.0386, size = 102, normalized size = 0.93

$$\frac{x\,\text{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}-\frac{i\,\text{Li}_2\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}+\frac{i\,\text{Li}_2\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x/(a+b*f**(2*x)),x)
```

```
[Out] x*atan(sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)) - I*polylog
(2, -I*sqrt(b)*f**x/sqrt(a))/(2*sqrt(a)*sqrt(b)*log(f)**2) + I*po
lylog(2, I*sqrt(b)*f**x/sqrt(a))/(2*sqrt(a)*sqrt(b)*log(f)**2)
```

Mathematica [A] time = 0.0607584, size = 108, normalized size = 0.98

$$\frac{i\left(-\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+x\log(f)\left(\log\left(1-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-\log\left(1+\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)\right)\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x)/(a + b*f^(2*x)),x]
```

```
[Out] ((I/2)*(x*Log[f]*(Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]] - Log[1 + (I*S
qrt[b]*f^x)/Sqrt[a]]) - PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]] +
```

```
PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]]))/(Sqrt[a]*Sqrt[b]*Log[f]^2)
```

Maple [C] time = 0.038, size = 134, normalized size = 1.2

$$\frac{x}{2\ln(f)}\ln\left(1\left(-bf^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}-\frac{x}{2\ln(f)}\ln\left(1\left(bf^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}+\frac{1}{2\left(\ln(f)\right)^{2}}dilog\left(1\left(-bf^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}-\frac{1}{2\left(\ln(f)\right)^{2}}dilog\left(1\left(bf^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x/(a+b*f^(2*x)),x)
```

```
[Out] 1/2/ln(f)*x/(-a*b)^(1/2)*ln((-b*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1
/2/ln(f)*x/(-a*b)^(1/2)*ln((b*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))+1/2
/ln(f)^2/(-a*b)^(1/2)*dilog((-b*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1
/2/ln(f)^2/(-a*b)^(1/2)*dilog((b*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.262571, size = 240, normalized size = 2.18

$$\frac{x\sqrt{-\frac{b}{a}}\log(f)\log\left(\frac{bf^{x}+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}\right)-x\sqrt{-\frac{b}{a}}\log(f)\log\left(-\frac{bf^{x}-a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}\right)+\sqrt{-\frac{b}{a}}\mathrm{Li}_2\left(-\frac{bf^{x}+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}+1\right)-\sqrt{-\frac{b}{a}}\mathrm{Li}_2\left(\frac{bf^{x}-a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}+1\right)}{2\,b\log(f)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a),x, algorithm="fricas")
```

```
[Out] 1/2*(x*sqrt(-b/a)*log(f)*log((b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a)
)) - x*sqrt(-b/a)*log(f)*log(-(b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/a
))) + sqrt(-b/a)*dilog(-(b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a)) + 1
) - sqrt(-b/a)*dilog((b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/a)) + 1))/
(b*log(f)^2)
```

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

$$\int \frac{f^{x}x}{a+bf^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x/(a+b*f**(2*x)),x)

[Out] Integral(f**x*x/(a + b*f**(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^x x}{b f^{2x} + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a),x, algorithm="giac")

[Out] integrate(f^x*x/(b*f^(2*x) + a), x)
```

3.45 $\int \frac{f^x x^2}{a+bf^{2x}}\,dx$

Optimal. Leaf size=184

$$\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] (x^2*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]) - (I
*x*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + (I*x*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]
*Log[f]^2) + (I*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*
Sqrt[b]*Log[f]^3) - (I*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt
[a]*Sqrt[b]*Log[f]^3)
```

Rubi [A] time = 0.307652, antiderivative size = 184, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444

$$\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x^2)/(a + b*f^(2*x)),x]
```

```
[Out] (x^2*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]) - (I
*x*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + (I*x*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]
*Log[f]^2) + (I*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*
Sqrt[b]*Log[f]^3) - (I*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt
[a]*Sqrt[b]*Log[f]^3)
```

Rubi in Sympy [A] time = 87.8661, size = 173, normalized size = 0.94

$$\frac{x^2\operatorname{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}-\frac{ix\operatorname{Li}_2\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^2}+\frac{ix\operatorname{Li}_2\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^2}+\frac{i\operatorname{Li}_3\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}-\frac{i\operatorname{Li}_3\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x**2/(a+b*f**(2*x)),x)
```

```
[Out] x**2*atan(sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)) - I*x*po
lylog(2, -I*sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)**2) + I
*x*polylog(2, I*sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)**2)
 + I*polylog(3, -I*sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)*
*3) - I*polylog(3, I*sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f
)**3)
```

Mathematica [A] time = 0.0446261, size = 168, normalized size = 0.91

$$\frac{i\left(2\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-2\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-2x\log(f)\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+2x\log(f)\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+x^2\log^2\cdots\right.}{2\sqrt{a}\sqrt{b}\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x^2)/(a + b*f^(2*x)),x]
```

```
[Out] ((I/2)*(x^2*Log[f]^2*Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]] - x^2*Log[f
]^2*Log[1 + (I*Sqrt[b]*f^x)/Sqrt[a]] - 2*x*Log[f]*PolyLog[2, ((-I
)*Sqrt[b]*f^x)/Sqrt[a]] + 2*x*Log[f]*PolyLog[2, (I*Sqrt[b]*f^x)/S
qrt[a]] + 2*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]] - 2*PolyLog[3,
 (I*Sqrt[b]*f^x)/Sqrt[a]]))/(Sqrt[a]*Sqrt[b]*Log[f]^3)
```

Maple [F] time = 0.031, size = 0, normalized size = 0.

$$\int \frac{f^x x^2}{a+bf^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x^2/(a+b*f^(2*x)),x)
```

```
[Out] int(f^x*x^2/(a+b*f^(2*x)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.274217, size = 338, normalized size = 1.84

$$\frac{x^2\sqrt{-\frac{b}{a}}\log(f)^2\log\left(\frac{bf^x+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}\right)-x^2\sqrt{-\frac{b}{a}}\log(f)^2\log\left(-\frac{bf^x-a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}\right)+2x\sqrt{-\frac{b}{a}}\text{Li}_2\left(-\frac{bf^x+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}+1\right)\log(f)-2x\sqrt{-\frac{b}{a}}\text{L}\cdots}{2b\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a),x, algorithm="fricas")
```

```
[Out] 1/2*(x^2*sqrt(-b/a)*log(f)^2*log((b*f^x + a*sqrt(-b/a))/(a*sqrt(-
b/a))) - x^2*sqrt(-b/a)*log(f)^2*log(-(b*f^x - a*sqrt(-b/a))/(a*s
qrt(-b/a))) + 2*x*sqrt(-b/a)*dilog(-(b*f^x + a*sqrt(-b/a))/(a*sqr
t(-b/a)) + 1)*log(f) - 2*x*sqrt(-b/a)*dilog((b*f^x - a*sqrt(-b/a)
)/(a*sqrt(-b/a)) + 1)*log(f) + 2*sqrt(-b/a)*polylog(3, b*f^x/(a*s
qrt(-b/a))) - 2*sqrt(-b/a)*polylog(3, -b*f^x/(a*sqrt(-b/a))))/(b*
log(f)^3)
```

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

$$\int \frac{f^x x^2}{a + b f^{2x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x**2/(a+b*f**(2*x)),x)
```

```
[Out] Integral(f**x*x**2/(a + b*f**(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^x x^2}{b f^{2x} + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a),x, algorithm="giac")
```

```
[Out] integrate(f^x*x^2/(b*f^(2*x) + a), x)
```

3.46 $\int \frac{f^x x^3}{a+bf^{2x}}\,dx$

Optimal. Leaf size=268

$$-\frac{3ix^2\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{3ix^2\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}-\frac{3i\text{PolyLog}\left(4,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(4,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3ix\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}+\frac{x^3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] (x^3*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((
(3*I)/2)*x^2*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqr
t[b]*Log[f]^2) + (((3*I)/2)*x^2*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a
]])/(Sqrt[a]*Sqrt[b]*Log[f]^2) + ((3*I)*x*PolyLog[3, ((-I)*Sqrt[b
]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*x*PolyLog[3,
 (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*Po
lyLog[4, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]^4)
+ ((3*I)*PolyLog[4, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Lo
g[f]^4)
```

Rubi [A] time = 0.403906, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5

$$-\frac{3ix^2\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{3ix^2\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}-\frac{3i\text{PolyLog}\left(4,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(4,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3ix\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}+\frac{x^3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x^3)/(a + b*f^(2*x)),x]
```

```
[Out] (x^3*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((
(3*I)/2)*x^2*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqr
t[b]*Log[f]^2) + (((3*I)/2)*x^2*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a
]])/(Sqrt[a]*Sqrt[b]*Log[f]^2) + ((3*I)*x*PolyLog[3, ((-I)*Sqrt[b
]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*x*PolyLog[3,
 (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*Po
lyLog[4, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Log[f]^4)
+ ((3*I)*PolyLog[4, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]*Lo
g[f]^4)
```

Rubi in Sympy [A] time = 102.86, size = 264, normalized size = 0.99

$$\frac{x^3\,\text{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}-\frac{3ix^2\,\text{Li}_2\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}+\frac{3ix^2\,\text{Li}_2\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}+\frac{3ix\,\text{Li}_3\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}-\frac{3ix\,\text{Li}_3\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}-\frac{3i\,\text{Li}_4\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^4}+\frac{3i\,\text{Li}_4\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x**3/(a+b*f**(2*x)),x)
```

```
[Out] x**3*atan(sqrt(b)*f**x/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)) - 3*I*x*
*2*polylog(2, -I*sqrt(b)*f**x/sqrt(a))/(2*sqrt(a)*sqrt(b)*log(f)*
*2) + 3*I*x**2*polylog(2, I*sqrt(b)*f**x/sqrt(a))/(2*sqrt(a)*sqrt
(b)*log(f)**2) + 3*I*x*polylog(3, -I*sqrt(b)*f**x/sqrt(a))/(sqrt(
a)*sqrt(b)*log(f)**3) - 3*I*x*polylog(3, I*sqrt(b)*f**x/sqrt(a))/
(sqrt(a)*sqrt(b)*log(f)**3) - 3*I*polylog(4, -I*sqrt(b)*f**x/sqrt
(a))/(sqrt(a)*sqrt(b)*log(f)**4) + 3*I*polylog(4, I*sqrt(b)*f**x/
sqrt(a))/(sqrt(a)*sqrt(b)*log(f)**4)
```

Mathematica [A] time = 0.0478135, size = 224, normalized size = 0.84

$$\frac{i\left(-3x^2\log^2(f)\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+3x^2\log^2(f)\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-6\text{PolyLog}\left(4,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+6\text{PolyLog}\left(4,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+6\ldots}{2\sqrt{a}\sqrt{b}\,1\ldots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x^3)/(a + b*f^(2*x)),x]
```

```
[Out] ((I/2)*(x^3*Log[f]^3*Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]] - x^3*Log[f
]^3*Log[1 + (I*Sqrt[b]*f^x)/Sqrt[a]] - 3*x^2*Log[f]^2*PolyLog[2,
((-I)*Sqrt[b]*f^x)/Sqrt[a]] + 3*x^2*Log[f]^2*PolyLog[2, (I*Sqrt[b
]*f^x)/Sqrt[a]] + 6*x*Log[f]*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a
]] - 6*x*Log[f]*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]] - 6*PolyLog[4
, ((-I)*Sqrt[b]*f^x)/Sqrt[a]] + 6*PolyLog[4, (I*Sqrt[b]*f^x)/Sqrt
[a]]))/(Sqrt[a]*Sqrt[b]*Log[f]^4)
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \frac{f^x x^3}{a+bf^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x^3/(a+b*f^(2*x)),x)
```

```
[Out] int(f^x*x^3/(a+b*f^(2*x)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^3/(b*f^(2*x) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.260007, size = 433, normalized size = 1.62

$$\frac{x^3\sqrt{-\frac{b}{a}}\log(f)^3\log\left(\frac{bf^x+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}\right)-x^3\sqrt{-\frac{b}{a}}\log(f)^3\log\left(-\frac{bf^x-a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}\right)+3x^2\sqrt{-\frac{b}{a}}\text{Li}_2\left(-\frac{bf^x+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}+1\right)\log(f)^2-3x^2\sqrt{-\ldots}}{2\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^3/(b*f^(2*x) + a),x, algorithm="fricas")
```

```
[Out] 1/2*(x^3*sqrt(-b/a)*log(f)^3*log((b*f^x + a*sqrt(-b/a))/(a*sqrt(-
b/a))) - x^3*sqrt(-b/a)*log(f)^3*log(-(b*f^x - a*sqrt(-b/a))/(a*s
qrt(-b/a))) + 3*x^2*sqrt(-b/a)*dilog(-(b*f^x + a*sqrt(-b/a))/(a*s
qrt(-b/a)) + 1)*log(f)^2 - 3*x^2*sqrt(-b/a)*dilog((b*f^x - a*sqrt
(-b/a))/(a*sqrt(-b/a)) + 1)*log(f)^2 + 6*x*sqrt(-b/a)*log(f)*poly
log(3, b*f^x/(a*sqrt(-b/a))) - 6*x*sqrt(-b/a)*log(f)*polylog(3, -
b*f^x/(a*sqrt(-b/a))) - 6*sqrt(-b/a)*polylog(4, b*f^x/(a*sqrt(-b/
a))) + 6*sqrt(-b/a)*polylog(4, -b*f^x/(a*sqrt(-b/a))))/(b*log(f)^
4)
```

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

$$\int \frac{f^x x^3}{a + bf^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x**3/(a+b*f**(2*x)),x)
```

```
[Out] Integral(f**x*x**3/(a + b*f**(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^x x^3}{bf^{2x} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^3/(b*f^(2*x) + a),x, algorithm="giac")
```

```
[Out] integrate(f^x*x^3/(b*f^(2*x) + a), x)
```

3.47 $\int \frac{f^x}{(a+bf^{2x})^2} dx$

Optimal. Leaf size=59

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}+\frac{f^x}{2a\log(f)\left(a+bf^{2x}\right)}$$

```
[Out] f^x/(2*a*(a + b*f^(2*x))*Log[f]) + ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/
(2*a^(3/2)*Sqrt[b]*Log[f])
```

Rubi [A] time = 0.0740082, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}+\frac{f^x}{2a\log(f)\left(a+bf^{2x}\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^x/(a + b*f^(2*x))^2,x]
```

```
[Out] f^x/(2*a*(a + b*f^(2*x))*Log[f]) + ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/
(2*a^(3/2)*Sqrt[b]*Log[f])
```

Rubi in Sympy [A] time = 10.5192, size = 48, normalized size = 0.81

$$\frac{f^x}{2a\left(a+bf^{2x}\right)\log\left(f\right)}+\frac{\operatorname{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{\frac{3}{2}}\sqrt{b}\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x/(a+b*f**(2*x))**2,x)
```

```
[Out] f**x/(2*a*(a + b*f**(2*x))*log(f)) + atan(sqrt(b)*f**x/sqrt(a))/(
2*a**(3/2)*sqrt(b)*log(f))
```

Mathematica [A] time = 0.0778586, size = 53, normalized size = 0.9

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{f^x}{a^2+abf^{2x}}}{2\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^x/(a + b*f^(2*x))^2,x]
```

```
[Out] (f^x/(a^2 + a*b*f^(2*x)) + ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(a^(3/2)
*Sqrt[b]))/(2*Log[f])
```

Maple [A] time = 0.046, size = 82, normalized size = 1.4

$$\frac{f^x}{2\ln(f)a\left(a+b\left(f^x\right)^2\right)}-\frac{1}{4\ln(f)a}\ln\left(f^x-a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}+\frac{1}{4\ln(f)a}\ln\left(f^x+a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x/(a+b*f^(2*x))^2,x)
```

```
[Out] 1/2/ln(f)/a*f^x/(a+b*(f^x)^2)-1/4/(-a*b)^(1/2)/a/ln(f)*ln(f^x-1/(
-a*b)^(1/2)*a)+1/4/(-a*b)^(1/2)/a/ln(f)*ln(f^x+1/(-a*b)^(1/2)*a)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.266697, size = 1, normalized size = 0.02

$$\left[\frac{\left(bf^{2x}+a\right)\log\left(\frac{2\,abf^{x}+\sqrt{-ab}bf^{2x}-\sqrt{-ab}a}{bf^{2x}+a}\right)+2\sqrt{-ab}f^{x}}{4\left(\sqrt{-ab}abf^{2x}\log\left(f\right)+\sqrt{-ab}a^{2}\log\left(f\right)\right)},-\frac{\left(bf^{2x}+a\right)\arctan\left(\frac{a}{\sqrt{ab}f^{x}}\right)-\sqrt{ab}f^{x}}{2\left(\sqrt{ab}abf^{2x}\log\left(f\right)+\sqrt{ab}a^{2}\log\left(f\right)\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*((b*f^(2*x) + a)*log((2*a*b*f^x + sqrt(-a*b)*b*f^(2*x) - sqr
t(-a*b)*a)/(b*f^(2*x) + a)) + 2*sqrt(-a*b)*f^x)/(sqrt(-a*b)*a*b*f
^(2*x)*log(f) + sqrt(-a*b)*a^2*log(f)), -1/2*((b*f^(2*x) + a)*arc
tan(a/(sqrt(a*b)*f^x)) - sqrt(a*b)*f^x)/(sqrt(a*b)*a*b*f^(2*x)*lo
g(f) + sqrt(a*b)*a^2*log(f))]
```

Sympy [A] time = 0.536304, size = 53, normalized size = 0.9

$$\frac{f^{x}}{2a^{2}\log\left(f\right)+2abf^{2x}\log\left(f\right)}+\frac{\operatorname{RootSum}\left(16z^{2}a^{3}b+1,\left(i\mapsto i\log\left(4ia^{2}+f^{x}\right)\right)\right)}{\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x/(a+b*f**(2*x))**2,x)
```

```
[Out] f**x/(2*a**2*log(f) + 2*a*b*f**(2*x)*log(f)) + RootSum(16*_z**2*a
**3*b + 1, Lambda(_i, _i*log(4*_i*a**2 + f**x)))/log(f)
```

GIAC/XCAS [A] time = 0.239208, size = 66, normalized size = 1.12

$$\frac{\arctan\left(\frac{bf^{x}}{\sqrt{ab}}\right)}{2\sqrt{ab}a\ln\left(f\right)}+\frac{f^{x}}{2\left(bf^{2x}+a\right)a\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a)^2,x, algorithm="giac")
```

```
[Out] 1/2*arctan(b*f^x/sqrt(a*b))/(sqrt(a*b)*a*ln(f)) + 1/2*f^x/((b*f^(
2*x) + a)*a*ln(f))
```

3.48 $\int \frac{f^x x}{(a+bf^{2x})^2}\,dx$

Optimal. Leaf size=172

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}-\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}+\frac{xf^x}{2a\log(f)(a+bf^{2x})}$$

```
[Out] -ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(2*a^(3/2)*Sqrt[b]*Log[f]^2) + (f^
x*x)/(2*a*(a + b*f^(2*x))*Log[f]) + (x*ArcTan[(Sqrt[b]*f^x)/Sqrt[
a]])/(2*a^(3/2)*Sqrt[b]*Log[f]) - ((I/4)*PolyLog[2, ((-I)*Sqrt[b]
*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2) + ((I/4)*PolyLog[2, (I
*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2)
```

Rubi [A] time = 0.271671, antiderivative size = 172, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}-\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}+\frac{xf^x}{2a\log(f)(a+bf^{2x})}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x)/(a + b*f^(2*x))^2,x]
```

```
[Out] -ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(2*a^(3/2)*Sqrt[b]*Log[f]^2) + (f^
x*x)/(2*a*(a + b*f^(2*x))*Log[f]) + (x*ArcTan[(Sqrt[b]*f^x)/Sqrt[
a]])/(2*a^(3/2)*Sqrt[b]*Log[f]) - ((I/4)*PolyLog[2, ((-I)*Sqrt[b]
*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2) + ((I/4)*PolyLog[2, (I
*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2)
```

Rubi in Sympy [A] time = 47.1636, size = 156, normalized size = 0.91

$$\frac{f^x x}{2a\left(a+bf^{2x}\right)\log(f)}+\frac{x\,\text{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{\frac{3}{2}}\sqrt{b}\log(f)}-\frac{\text{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{\frac{3}{2}}\sqrt{b}\log(f)^2}-\frac{i\,\text{Li}_2\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{\frac{3}{2}}\sqrt{b}\log(f)^2}+\frac{i\,\text{Li}_2\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{\frac{3}{2}}\sqrt{b}\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x/(a+b*f**(2*x))**2,x)
```

```
[Out] f**x*x/(2*a*(a + b*f**(2*x))*log(f)) + x*atan(sqrt(b)*f**x/sqrt(a
))/(2*a**(3/2)*sqrt(b)*log(f)) - atan(sqrt(b)*f**x/sqrt(a))/(2*a*
*(3/2)*sqrt(b)*log(f)**2) - I*polylog(2, -I*sqrt(b)*f**x/sqrt(a))
/(4*a**(3/2)*sqrt(b)*log(f)**2) + I*polylog(2, I*sqrt(b)*f**x/sqr
t(a))/(4*a**(3/2)*sqrt(b)*log(f)**2)
```

Mathematica [A] time = 0.15363, size = 271, normalized size = 1.58

$$\frac{\frac{-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^2(f)}-\frac{ix\log\left(1+\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log(f)}+\frac{ix^2}{2\sqrt{a}}}{2\sqrt{b}}+\frac{\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^2(f)}+\frac{ix\log\left(1-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log(f)}-\frac{ix^2}{2\sqrt{a}}}{2\sqrt{b}}}{2a}+\frac{xf^x}{2a\log(f)(a+bf^{2x})}-\frac{\left(\frac{bf^{2x}}{a}+1\right)\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)(a+bf^{2x})}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x)/(a + b*f^(2*x))^2,x]
```

```
[Out] -((1 + (b*f^(2*x))/a)*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(2*Sqrt[a]*S
qrt[b]*(a + b*f^(2*x))*Log[f]^2) + (f^x*x)/(2*a*(a + b*f^(2*x))*L
og[f]) + ((((I/2)*x^2)/Sqrt[a] - (I*x*Log[1 + (I*Sqrt[b]*f^x)/Sqr
t[a]])/(Sqrt[a]*Log[f]) - (I*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a
]])/(Sqrt[a]*Log[f]^2))/(2*Sqrt[b]) + (((-I/2)*x^2)/Sqrt[a] + (I*
x*Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]) + (I*PolyLog
[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]^2))/(2*Sqrt[b]))/(2
*a)
```

Maple [C] time = 0.052, size = 195, normalized size = 1.1

$$\frac{f^x x}{2 \ln(f) a \left(a + b \left(f^x\right)^2\right)} + \frac{x}{4 \ln(f) a} \ln\left(1 \left(-b f^x + \sqrt{-ab}\right) \frac{1}{\sqrt{-ab}}\right) \frac{1}{\sqrt{-ab}} - \frac{x}{4 \ln(f) a} \ln\left(1 \left(b f^x + \sqrt{-ab}\right) \frac{1}{\sqrt{-ab}}\right) \frac{1}{\sqrt{-ab}} + \frac{1}{4 \left(\ln(f)\right)^2 a} \mathit{dilog}\left(1 \left(-b f^x + \sqrt{-ab}\right) \frac{1}{\sqrt{-ab}}\right) \frac{1}{\sqrt{-ab}} - \frac{1}{4 \left(\ln(f)\right)^2 a} \mathit{dilog}\left(1 \left(b f^x + \sqrt{-ab}\right) \frac{1}{\sqrt{-ab}}\right) \frac{1}{\sqrt{-ab}} - \frac{1}{2 \left(\ln(f)\right)^2 a} \arctan\left(b f^x \frac{1}{\sqrt{ab}}\right) \frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x/(a+b*f^(2*x))^2,x)
```

```
[Out] 1/2/ln(f)/a*f^x*x/(a+b*(f^x)^2)+1/4/ln(f)/a*x/(-a*b)^(1/2)*ln((-b
*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1/4/ln(f)/a*x/(-a*b)^(1/2)*ln((b
*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))+1/4/ln(f)^2/a/(-a*b)^(1/2)*dilog
((-b*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1/4/ln(f)^2/a/(-a*b)^(1/2)*d
ilog((b*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1/2/ln(f)^2/a/(a*b)^(1/2)
*arctan(b*f^x/(a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.2669, size = 509, normalized size = 2.96

$$2 b f^x x \log(f) + \left(b f^{2x} \sqrt{-\frac{b}{a}} + a \sqrt{-\frac{b}{a}}\right) \mathrm{Li}_2\left(-\frac{b f^x + a \sqrt{-\frac{b}{a}}}{a \sqrt{-\frac{b}{a}}} + 1\right) - \left(b f^{2x} \sqrt{-\frac{b}{a}} + a \sqrt{-\frac{b}{a}}\right) \mathrm{Li}_2\left(\frac{b f^x - a \sqrt{-\frac{b}{a}}}{a \sqrt{-\frac{b}{a}}} + 1\right) - \left(b f^{2x} \sqrt{-\frac{b}{a}} +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*b*f^x*x*log(f) + (b*f^(2*x)*sqrt(-b/a) + a*sqrt(-b/a))*dil
og(-(b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a)) + 1) - (b*f^(2*x)*sqrt(
-b/a) + a*sqrt(-b/a))*dilog((b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/a))
 + 1) - (b*f^(2*x)*sqrt(-b/a) + a*sqrt(-b/a))*log(2*b*f^x + 2*a*s
qrt(-b/a)) + (b*f^(2*x)*sqrt(-b/a) + a*sqrt(-b/a))*log(2*b*f^x -
2*a*sqrt(-b/a)) + (b*f^(2*x)*x*sqrt(-b/a)*log(f) + a*x*sqrt(-b/a)
*log(f))*log((b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a))) - (b*f^(2*x)*
x*sqrt(-b/a)*log(f) + a*x*sqrt(-b/a)*log(f))*log(-(b*f^x - a*sqrt
(-b/a))/(a*sqrt(-b/a))))/(a*b^2*f^(2*x)*log(f)^2 + a^2*b*log(f)^2
)
```

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

$$\frac{f^x x}{2a^2 \log(f) + 2abf^{2x} \log(f)} + \frac{\int \left(-\frac{f^x}{a+bf^{2x}}\right) dx + \int \frac{f^x x \log(f)}{a+bf^{2x}} dx}{2a \log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x/(a+b*f**(2*x))**2,x)
```

```
[Out] f**x*x/(2*a**2*log(f) + 2*a*b*f**(2*x)*log(f)) + (Integral(-f**x/
(a + b*f**(2*x)), x) + Integral(f**x*x*log(f)/(a + b*f**(2*x)), x
))/(2*a*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^x x}{(bf^{2x} + a)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a)^2,x, algorithm="giac")
```

```
[Out] integrate(f^x*x/(b*f^(2*x) + a)^2, x)
```

3.49 $\int \frac{f^x x^2}{(a+bf^{2x})^2} dx$

Optimal. Leaf size=333

$$\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}+\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}-\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\log^2(f)}+\frac{x^2f^x}{2a\log(f)(a+bf^{2x})}$$

```
[Out] -((x*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2)) +
 (f^x*x^2)/(2*a*(a + b*f^(2*x))*Log[f]) + (x^2*ArcTan[(Sqrt[b]*f^
x)/Sqrt[a]])/(2*a^(3/2)*Sqrt[b]*Log[f]) + ((I/2)*PolyLog[2, ((-I)
*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3) - ((I/2)*x*Pol
yLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2) -
 ((I/2)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log
[f]^3) + ((I/2)*x*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*S
qrt[b]*Log[f]^2) + ((I/2)*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])
/(a^(3/2)*Sqrt[b]*Log[f]^3) - ((I/2)*PolyLog[3, (I*Sqrt[b]*f^x)/S
qrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3)
```

Rubi [A] time = 0.637285, antiderivative size = 333, normalized size of antiderivative = 1., number of steps used = 16, number of rules used = 12, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667

$$\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}+\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}-\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\log^2(f)}+\frac{x^2f^x}{2a\log(f)(a+bf^{2x})}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x^2)/(a + b*f^(2*x))^2,x]
```

```
[Out] -((x*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2)) +
 (f^x*x^2)/(2*a*(a + b*f^(2*x))*Log[f]) + (x^2*ArcTan[(Sqrt[b]*f^
x)/Sqrt[a]])/(2*a^(3/2)*Sqrt[b]*Log[f]) + ((I/2)*PolyLog[2, ((-I)
*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3) - ((I/2)*x*Pol
yLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2) -
 ((I/2)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log
[f]^3) + ((I/2)*x*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*S
qrt[b]*Log[f]^2) + ((I/2)*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])
/(a^(3/2)*Sqrt[b]*Log[f]^3) - ((I/2)*PolyLog[3, (I*Sqrt[b]*f^x)/S
qrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x**2/(a+b*f**(2*x))**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.164959, size = 477, normalized size = 1.43

$$-\frac{\frac{-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^2(f)}-\frac{ix\log\left(1+\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log(f)}+\frac{ix^2}{2\sqrt{a}}}{2\sqrt{b}}+\frac{\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^2(f)}+\frac{ix\log\left(1-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log(f)}-\frac{ix^2}{2\sqrt{a}}}{2\sqrt{b}}}{a\log(f)}+\frac{\frac{\frac{2i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^3(f)}-\frac{2ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^2(f)}-\frac{ix^2\log\left(1+\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log(f)}+\frac{ix^3}{3\sqrt{a}}}{2\sqrt{b}}+\frac{-\frac{2i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^3(f)}+\frac{2ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log^2(f)}+\frac{ix^2\log\left(1-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\log(f)}-\frac{ix^3}{3\sqrt{a}}}{2\sqrt{b}}}{2a}+\frac{x^2f^x}{2a\log(f)\left(a+bf^{2x}\right)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x^2)/(a + b*f^(2*x))^2,x]
```

```
[Out] (f^x*x^2)/(2*a*(a + b*f^(2*x))*Log[f]) - ((((I/2)*x^2)/Sqrt[a] -
(I*x*Log[1 + (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]) - (I*Poly
Log[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]^2))/(2*Sqrt[b
]) + (((-I/2)*x^2)/Sqrt[a] + (I*x*Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]
])/(Sqrt[a]*Log[f]) + (I*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sq
rt[a]*Log[f]^2))/(2*Sqrt[b]))/(a*Log[f]) + ((((I/3)*x^3)/Sqrt[a]
- (I*x^2*Log[1 + (I*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]) - ((2
*I)*x*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]^2)
+ ((2*I)*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]^
3))/(2*Sqrt[b]) + (((-I/3)*x^3)/Sqrt[a] + (I*x^2*Log[1 - (I*Sqrt[
b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]) + ((2*I)*x*PolyLog[2, (I*Sqrt[
b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]^2) - ((2*I)*PolyLog[3, (I*Sqrt[
b]*f^x)/Sqrt[a]])/(Sqrt[a]*Log[f]^3))/(2*Sqrt[b]))/(2*a)
```

Maple [F] time = 0.101, size = 0, normalized size = 0.

$$\int \frac{f^x x^2}{\left(a+bf^{2x}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x^2/(a+b*f^(2*x))^2,x)
```

```
[Out] int(f^x*x^2/(a+b*f^(2*x))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.268349, size = 624, normalized size = 1.87

$$2\,bf^{x}x^{2}\log\left(f\right)^{2}+2\left(\left(bx\log\left(f\right)-b\right)f^{2\,x}\sqrt{-\frac{b}{a}}+\left(ax\log\left(f\right)-a\right)\sqrt{-\frac{b}{a}}\right){\rm Li}_2\left(-\frac{bf^{x}+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}+1\right)-2\left(\left(bx\log\left(f\right)-b\right)f^{2\,x}\sqrt{-\frac{b}{a}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*b*f^x*x^2*log(f)^2 + 2*((b*x*log(f) - b)*f^(2*x)*sqrt(-b/a
) + (a*x*log(f) - a)*sqrt(-b/a))*dilog(-(b*f^x + a*sqrt(-b/a))/(a
*sqrt(-b/a)) + 1) - 2*((b*x*log(f) - b)*f^(2*x)*sqrt(-b/a) + (a*x
*log(f) - a)*sqrt(-b/a))*dilog((b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/
a)) + 1) + ((b*x^2*log(f)^2 - 2*b*x*log(f))*f^(2*x)*sqrt(-b/a) +
(a*x^2*log(f)^2 - 2*a*x*log(f))*sqrt(-b/a))*log((b*f^x + a*sqrt(-
b/a))/(a*sqrt(-b/a))) - ((b*x^2*log(f)^2 - 2*b*x*log(f))*f^(2*x)*
sqrt(-b/a) + (a*x^2*log(f)^2 - 2*a*x*log(f))*sqrt(-b/a))*log(-(b*
f^x - a*sqrt(-b/a))/(a*sqrt(-b/a))) + 2*(b*f^(2*x)*sqrt(-b/a) + a
*sqrt(-b/a))*polylog(3, b*f^x/(a*sqrt(-b/a))) - 2*(b*f^(2*x)*sqrt
(-b/a) + a*sqrt(-b/a))*polylog(3, -b*f^x/(a*sqrt(-b/a))))/(a*b^2*
f^(2*x)*log(f)^3 + a^2*b*log(f)^3)
```

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

$$\frac{f^{x}x^{2}}{2a^{2}\log\left(f\right)+2abf^{2x}\log\left(f\right)}+\frac{\int\left(-\frac{2f^{x}x}{a+bf^{2x}}\right)\,dx+\int\frac{f^{x}x^{2}\log\left(f\right)}{a+bf^{2x}}\,dx}{2a\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x**2/(a+b*f**(2*x))**2,x)
```

```
[Out] f**x*x**2/(2*a**2*log(f) + 2*a*b*f**(2*x)*log(f)) + (Integral(-2*
f**x*x/(a + b*f**(2*x)), x) + Integral(f**x*x**2*log(f)/(a + b*f*
*(2*x)), x))/(2*a*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{x}x^{2}}{\left(bf^{2\,x}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a)^2,x, algorithm="giac")
```

```
[Out] integrate(f^x*x^2/(b*f^(2*x) + a)^2, x)
```

3.50 $\int \frac{f^x x^3}{(a+bf^{2x})^2}\,dx$

Optimal. Leaf size=501

$$-\frac{3ix^2\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}+\frac{3ix^2\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}-\frac{3i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}-\frac{3i\text{PolyLog}\left(4,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(4,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}+\frac{3ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}+\frac{3ix\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}+\frac{x^3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}-\frac{3x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{x^3f^x}{2a\log(f)\left(a+bf^{2x}\right)}$$

```
[Out] (-3*x^2*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(2*a^(3/2)*Sqrt[b]*Log[f]^
2) + (f^x*x^3)/(2*a*(a + b*f^(2*x))*Log[f]) + (x^3*ArcTan[(Sqrt[b
]*f^x)/Sqrt[a]])/(2*a^(3/2)*Sqrt[b]*Log[f]) + (((3*I)/2)*x*PolyLo
g[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3) - ((
(3*I)/4)*x^2*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqr
t[b]*Log[f]^2) - (((3*I)/2)*x*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]]
)/(a^(3/2)*Sqrt[b]*Log[f]^3) + (((3*I)/4)*x^2*PolyLog[2, (I*Sqrt[
b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2) - (((3*I)/2)*PolyLog
[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^4) + (((
3*I)/2)*x*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b
]*Log[f]^3) + (((3*I)/2)*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^
(3/2)*Sqrt[b]*Log[f]^4) - (((3*I)/2)*x*PolyLog[3, (I*Sqrt[b]*f^x)
/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3) - (((3*I)/2)*PolyLog[4, ((-
I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^4) + (((3*I)/2)
*PolyLog[4, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^4)
```

Rubi [A] time = 0.909373, antiderivative size = 501, normalized size of antiderivative = 1., number of steps used = 21, number of rules used = 11, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.611$

$$-\frac{3ix^2\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}+\frac{3ix^2\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{3/2}\sqrt{b}\log^2(f)}-\frac{3i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}-\frac{3i\text{PolyLog}\left(4,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(4,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^4(f)}+\frac{3ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}+\frac{3ix\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^3(f)}+\frac{x^3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log(f)}-\frac{3x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{b}\log^2(f)}+\frac{x^3f^x}{2a\log(f)\left(a+bf^{2x}\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x^3)/(a + b*f^(2*x))^2,x]
```

```
[Out] (-3*x^2*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(2*a^(3/2)*Sqrt[b]*Log[f]^
2) + (f^x*x^3)/(2*a*(a + b*f^(2*x))*Log[f]) + (x^3*ArcTan[(Sqrt[b
]*f^x)/Sqrt[a]])/(2*a^(3/2)*Sqrt[b]*Log[f]) + (((3*I)/2)*x*PolyLo
g[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3) - ((
(3*I)/4)*x^2*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqr
t[b]*Log[f]^2) - (((3*I)/2)*x*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]]
)/(a^(3/2)*Sqrt[b]*Log[f]^3) + (((3*I)/4)*x^2*PolyLog[2, (I*Sqrt[
b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^2) - (((3*I)/2)*PolyLog
[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^4) + (((
```

```
3*I)/2)*x*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b
]*Log[f]^3) + (((3*I)/2)*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^
(3/2)*Sqrt[b]*Log[f]^4) - (((3*I)/2)*x*PolyLog[3, (I*Sqrt[b]*f^x)
/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^3) - (((3*I)/2)*PolyLog[4, ((-
I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^4) + (((3*I)/2)
*PolyLog[4, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Log[f]^4)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x**3/(a+b*f**(2*x))**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.419888, size = 434, normalized size = 0.87

$$-\frac{6i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{b}}+\frac{6i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{b}}-\frac{6i\text{PolyLog}\left(4,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{b}}+\frac{6i\text{PolyLog}\left(4,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{b}}-\frac{3ix\log(f)(x\log(f)-2)\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x^3)/(a + b*f^(2*x))^2,x]
```

```
[Out] ((2*Sqrt[a]*f^x*x^3*Log[f]^3)/(a + b*f^(2*x)) - ((3*I)*x^2*Log[f]
^2*Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] + (I*x^3*Log[f]^3*Lo
g[1 - (I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] + ((3*I)*x^2*Log[f]^2*Log
[1 + (I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] - (I*x^3*Log[f]^3*Log[1 +
(I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] - ((3*I)*x*Log[f]*(-2 + x*Log[f
])*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] + ((3*I)*x*Log
[f]*(-2 + x*Log[f])*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b]
- ((6*I)*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] + ((6*I)
*x*Log[f]*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] + ((6*I
)*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] - ((6*I)*x*Log[f]*
PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] - ((6*I)*PolyLog[4,
((-I)*Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b] + ((6*I)*PolyLog[4, (I*Sqrt[
b]*f^x)/Sqrt[a]])/Sqrt[b])/(4*a^(3/2)*Log[f]^4)
```

Maple [F] time = 0.105, size = 0, normalized size = 0.

$$\int \frac{f^x x^3}{(a+bf^{2x})^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x^3/(a+b*f^(2*x))^2,x)
```

```
[Out] int(f^x*x^3/(a+b*f^(2*x))^2,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^3/(b*f^(2*x) + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.260864, size = 852, normalized size = 1.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^3/(b*f^(2*x) + a)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*b*f^x*x^3*log(f)^3 + 3*((b*x^2*log(f)^2 - 2*b*x*log(f))*f^
(2*x)*sqrt(-b/a) + (a*x^2*log(f)^2 - 2*a*x*log(f))*sqrt(-b/a))*di
log(-(b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a)) + 1) - 3*((b*x^2*log(f
)^2 - 2*b*x*log(f))*f^(2*x)*sqrt(-b/a) + (a*x^2*log(f)^2 - 2*a*x*
log(f))*sqrt(-b/a))*dilog((b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/a)) +
 1) + ((b*x^3*log(f)^3 - 3*b*x^2*log(f)^2)*f^(2*x)*sqrt(-b/a) + (
a*x^3*log(f)^3 - 3*a*x^2*log(f)^2)*sqrt(-b/a))*log((b*f^x + a*sqr
t(-b/a))/(a*sqrt(-b/a))) - ((b*x^3*log(f)^3 - 3*b*x^2*log(f)^2)*f
^(2*x)*sqrt(-b/a) + (a*x^3*log(f)^3 - 3*a*x^2*log(f)^2)*sqrt(-b/a
))*log(-(b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/a))) - 6*(b*f^(2*x)*sqr
t(-b/a) + a*sqrt(-b/a))*polylog(4, b*f^x/(a*sqrt(-b/a))) + 6*(b*f
^(2*x)*sqrt(-b/a) + a*sqrt(-b/a))*polylog(4, -b*f^x/(a*sqrt(-b/a)
)) + 6*((b*x*log(f) - b)*f^(2*x)*sqrt(-b/a) + (a*x*log(f) - a)*sq
rt(-b/a))*polylog(3, b*f^x/(a*sqrt(-b/a))) - 6*((b*x*log(f) - b)*
f^(2*x)*sqrt(-b/a) + (a*x*log(f) - a)*sqrt(-b/a))*polylog(3, -b*f
^x/(a*sqrt(-b/a))))/(a*b^2*f^(2*x)*log(f)^4 + a^2*b*log(f)^4)
```

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

$$\frac{f^{x}x^{3}}{2a^{2}\log(f)+2abf^{2x}\log(f)}+\frac{\int\left(-\frac{3f^{x}x^{2}}{a+bf^{2x}}\right)dx+\int\frac{f^{x}x^{3}\log(f)}{a+bf^{2x}}\,dx}{2a\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x**3/(a+b*f**(2*x))**2,x)
```

```
[Out] f**x*x**3/(2*a**2*log(f) + 2*a*b*f**(2*x)*log(f)) + (Integral(-3*
f**x*x**2/(a + b*f**(2*x)), x) + Integral(f**x*x**3*log(f)/(a + b
*f**(2*x)), x))/(2*a*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{x}x^{3}}{(bf^{2x}+a)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^3/(b*f^(2*x) + a)^2,x, algorithm="giac")
```

```
[Out] integrate(f^x*x^3/(b*f^(2*x) + a)^2, x)
```

3.51 $\int \frac{f^x}{(a+bf^{2x})^3} \, dx$

Optimal. Leaf size=84

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log(f)}+\frac{3f^x}{8a^2\log(f)\left(a+bf^{2x}\right)}+\frac{f^x}{4a\log(f)\left(a+bf^{2x}\right)^2}$$

```
[Out] f^x/(4*a*(a + b*f^(2*x))^2*Log[f]) + (3*f^x)/(8*a^2*(a + b*f^(2*x
))*Log[f]) + (3*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[b]
*Log[f])
```

Rubi [A] time = 0.0984949, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log(f)}+\frac{3f^x}{8a^2\log(f)\left(a+bf^{2x}\right)}+\frac{f^x}{4a\log(f)\left(a+bf^{2x}\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^x/(a + b*f^(2*x))^3,x]
```

```
[Out] f^x/(4*a*(a + b*f^(2*x))^2*Log[f]) + (3*f^x)/(8*a^2*(a + b*f^(2*x
))*Log[f]) + (3*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[b]
*Log[f])
```

Rubi in Sympy [A] time = 13.3973, size = 73, normalized size = 0.87

$$\frac{f^x}{4a\left(a+bf^{2x}\right)^2\log(f)}+\frac{3f^x}{8a^2\left(a+bf^{2x}\right)\log(f)}+\frac{3\,\mathrm{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{\frac{5}{2}}\sqrt{b}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x/(a+b*f**(2*x))**3,x)
```

```
[Out] f**x/(4*a*(a + b*f**(2*x))**2*log(f)) + 3*f**x/(8*a**2*(a + b*f**
(2*x))*log(f)) + 3*atan(sqrt(b)*f**x/sqrt(a))/(8*a**(5/2)*sqrt(b)
*log(f))
```

Mathematica [A] time = 0.0851824, size = 68, normalized size = 0.81

$$\frac{\frac{3\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{b}}+\frac{\sqrt{a}f^x\left(5a+3bf^{2x}\right)}{\left(a+bf^{2x}\right)^2}}{8a^{5/2}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^x/(a + b*f^(2*x))^3,x]
```

```
[Out] ((Sqrt[a]*f^x*(5*a + 3*b*f^(2*x)))/(a + b*f^(2*x))^2 + (3*ArcTan[
(Sqrt[b]*f^x)/Sqrt[a]])/Sqrt[b])/(8*a^(5/2)*Log[f])
```

Maple [A] time = 0.061, size = 94, normalized size = 1.1

$$\frac{\left(3\,b\,(f^x)^2+5\,a\right)\,f^x}{8\,\ln(f)\,a^2\,\left(a+b\,(f^x)^2\right)^2}-\frac{3}{16\,\ln(f)\,a^2}\ln\left(f^x-a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}+\frac{3}{16\,\ln(f)\,a^2}\ln\left(f^x+a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x/(a+b*f^(2*x))^3,x)
```

```
[Out] 1/8*f^x*(3*b*(f^x)^2+5*a)/ln(f)/a^2/(a+b*(f^x)^2)^2-3/16/(-a*b)^(
1/2)/a^2/ln(f)*ln(f^x-1/(-a*b)^(1/2)*a)+3/16/(-a*b)^(1/2)/a^2/ln(
f)*ln(f^x+1/(-a*b)^(1/2)*a)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.271917, size = 1, normalized size = 0.01

$$\left[\frac{6\,\sqrt{-ab}bf^{3\,x}+10\,\sqrt{-ab}af^{x}+3\,\left(b^2f^{4\,x}+2\,abf^{2\,x}+a^2\right)\log\left(\frac{2\,abf^{x}+\sqrt{-ab}bf^{2\,x}-\sqrt{-ab}a}{bf^{2\,x}+a}\right)}{16\,\left(\sqrt{-ab}a^2b^2f^{4\,x}\log(f)+2\,\sqrt{-ab}a^3bf^{2\,x}\log(f)+\sqrt{-ab}a^4\log(f)\right)},\ \frac{3\,\sqrt{ab}bf^{3\,x}+5\,\sqrt{ab}af^{x}-3\,\left(b^2f^{4}\right.}{8\left(\sqrt{ab}a^2b^2f^{4\,x}\log(f)+2\,\sqrt{ab}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(6*sqrt(-a*b)*b*f^(3*x) + 10*sqrt(-a*b)*a*f^x + 3*(b^2*f^(4
*x) + 2*a*b*f^(2*x) + a^2)*log((2*a*b*f^x + sqrt(-a*b)*b*f^(2*x)
- sqrt(-a*b)*a)/(b*f^(2*x) + a)))/(sqrt(-a*b)*a^2*b^2*f^(4*x)*log
(f) + 2*sqrt(-a*b)*a^3*b*f^(2*x)*log(f) + sqrt(-a*b)*a^4*log(f)),
 1/8*(3*sqrt(a*b)*b*f^(3*x) + 5*sqrt(a*b)*a*f^x - 3*(b^2*f^(4*x)
+ 2*a*b*f^(2*x) + a^2)*arctan(a/(sqrt(a*b)*f^x)))/(sqrt(a*b)*a^2*
b^2*f^(4*x)*log(f) + 2*sqrt(a*b)*a^3*b*f^(2*x)*log(f) + sqrt(a*b)
*a^4*log(f))]
```

Sympy [A] time = 0.689219, size = 85, normalized size = 1.01

$$\frac{5af^{x}+3bf^{3x}}{8a^4\log(f)+16a^3bf^{2x}\log(f)+8a^2b^2f^{4x}\log(f)}+\frac{\operatorname{RootSum}\left(256z^2a^5b+9,\left(i\mapsto i\log\left(\frac{16ia^3}{3}+f^x\right)\right)\right)}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x/(a+b*f**(2*x))**3,x)
```

```
[Out] (5*a*f**x + 3*b*f**(3*x))/(8*a**4*log(f) + 16*a**3*b*f**(2*x)*log
(f) + 8*a**2*b**2*f**(4*x)*log(f)) + RootSum(256*_z**2*a**5*b + 9
, Lambda(_i, _i*log(16*_i*a**3/3 + f**x)))/log(f)
```

GIAC/XCAS [A] time = 0.234863, size = 82, normalized size = 0.98

$$\frac{3 \arctan\left(\frac{bf^x}{\sqrt{ab}}\right)}{8 \sqrt{ab}a^2\ln(f)} + \frac{3\,bf^{3\,x} + 5\,af^x}{8\,(bf^{2\,x} + a)^2a^2\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x/(b*f^(2*x) + a)^3,x, algorithm="giac")
```

```
[Out] 3/8*arctan(b*f^x/sqrt(a*b))/(sqrt(a*b)*a^2*ln(f)) + 1/8*(3*b*f^(3
*x) + 5*a*f^x)/((b*f^(2*x) + a)^2*a^2*ln(f))
```

3.52 $\int \frac{f^x x}{(a+bf^{2x})^3} \, dx$

Optimal. Leaf size=223

$$-\frac{3i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{16a^{5/2}\sqrt{b}\log^2(f)}+\frac{3i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{16a^{5/2}\sqrt{b}\log^2(f)}-\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{5/2}\sqrt{b}\log^2(f)}+\frac{3x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log(f)}-\frac{f^x}{8a^2\log^2(f)(a+bf^{2x})}+\frac{3xf^x}{8a^2\log(f)(a+bf^{2x})}+\frac{xf^x}{4a\log(f)(a+bf^{2x})^2}$$

```
[Out] -f^x/(8*a^2*(a + b*f^(2*x))*Log[f]^2) - ArcTan[(Sqrt[b]*f^x)/Sqrt
[a]]/(2*a^(5/2)*Sqrt[b]*Log[f]^2) + (f^x*x)/(4*a*(a + b*f^(2*x))^
2*Log[f]) + (3*f^x*x)/(8*a^2*(a + b*f^(2*x))*Log[f]) + (3*x*ArcTa
n[(Sqrt[b]*f^x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[b]*Log[f]) - (((3*I)/16
)*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[f]
^2) + (((3*I)/16)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*S
qrt[b]*Log[f]^2)
```

Rubi [A] time = 0.380101, antiderivative size = 223, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$

$$-\frac{3i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{16a^{5/2}\sqrt{b}\log^2(f)}+\frac{3i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{16a^{5/2}\sqrt{b}\log^2(f)}-\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{5/2}\sqrt{b}\log^2(f)}+\frac{3x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log(f)}-\frac{f^x}{8a^2\log^2(f)(a+bf^{2x})}+\frac{3xf^x}{8a^2\log(f)(a+bf^{2x})}+\frac{xf^x}{4a\log(f)(a+bf^{2x})^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x)/(a + b*f^(2*x))^3,x]
```

```
[Out] -f^x/(8*a^2*(a + b*f^(2*x))*Log[f]^2) - ArcTan[(Sqrt[b]*f^x)/Sqrt
[a]]/(2*a^(5/2)*Sqrt[b]*Log[f]^2) + (f^x*x)/(4*a*(a + b*f^(2*x))^
2*Log[f]) + (3*f^x*x)/(8*a^2*(a + b*f^(2*x))*Log[f]) + (3*x*ArcTa
n[(Sqrt[b]*f^x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[b]*Log[f]) - (((3*I)/16
)*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[f]
^2) + (((3*I)/16)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*S
qrt[b]*Log[f]^2)
```

Rubi in Sympy [A] time = 65.1531, size = 209, normalized size = 0.94

$$\frac{f^x x}{4a(a+bf^{2x})^2\log(f)}+\frac{3f^x x}{8a^2(a+bf^{2x})\log(f)}-\frac{f^x}{8a^2(a+bf^{2x})\log(f)^2}+\frac{3x\,\text{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{\frac{5}{2}}\sqrt{b}\log(f)}-\frac{\text{atan}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{\frac{5}{2}}\sqrt{b}\log(f)^2}-\frac{3i\,\text{Li}_2\left(-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{16a^{\frac{5}{2}}\sqrt{b}\log(f)^2}+\frac{3i\,\text{Li}_2\left(\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{16a^{\frac{5}{2}}\sqrt{b}\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x/(a+b*f**(2*x))**3,x)
```

```
[Out] f**x*x/(4*a*(a + b*f**(2*x))**2*log(f)) + 3*f**x*x/(8*a**2*(a + b
*f**(2*x))*log(f)) - f**x/(8*a**2*(a + b*f**(2*x))*log(f)**2) + 3
*x*atan(sqrt(b)*f**x/sqrt(a))/(8*a**(5/2)*sqrt(b)*log(f)) - atan(
sqrt(b)*f**x/sqrt(a))/(2*a**(5/2)*sqrt(b)*log(f)**2) - 3*I*polylo
g(2, -I*sqrt(b)*f**x/sqrt(a))/(16*a**(5/2)*sqrt(b)*log(f)**2) + 3
*I*polylog(2, I*sqrt(b)*f**x/sqrt(a))/(16*a**(5/2)*sqrt(b)*log(f)
```

```
**2)
```

Mathematica [A] time = 0.433942, size = 184, normalized size = 0.83

$$\frac{\frac{6i\left(-\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+x\log(f)\left(\log\left(1-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-\log\left(1+\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)\right)\right)}{\sqrt{a}\sqrt{b}}-\frac{16\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}+\frac{8axf^x\log(f)}{(a+bf^{2x})^2}+\frac{4f^x(3x\log(f)-1)}{a+bf^{2x}}}{32a^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x)/(a + b*f^(2*x))^3,x]
```

```
[Out] ((-16*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]) + (8*a*f^x
*x*Log[f])/(a + b*f^(2*x))^2 + (4*f^x*(-1 + 3*x*Log[f]))/(a + b*f
^(2*x)) + ((6*I)*(x*Log[f]*(Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a]] - Lo
g[1 + (I*Sqrt[b]*f^x)/Sqrt[a]]) - PolyLog[2, ((-I)*Sqrt[b]*f^x)/S
qrt[a]] + PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]]))/(Sqrt[a]*Sqrt[b])
)/(32*a^2*Log[f]^2)
```

Maple [C] time = 0.058, size = 223, normalized size = 1.

$$\frac{\left(3\,\ln(f)\,bx\,(f^x)^2+5\,\ln(f)\,ax-b\,(f^x)^2-a\right)f^x}{8\,(\ln(f))^2\,a^2\left(a+b\,(f^x)^2\right)^2}-\frac{1}{2\,(\ln(f))^2\,a^2}\arctan\left(bf^x\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$
$$+\frac{3\,x}{16\,\ln(f)\,a^2}\ln\left(1\left(-bf^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$
$$-\frac{3\,x}{16\,\ln(f)\,a^2}\ln\left(1\left(bf^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$
$$+\frac{3}{16\,(\ln(f))^2\,a^2}dilog\left(1\left(-bf^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$
$$-\frac{3}{16\,(\ln(f))^2\,a^2}dilog\left(1\left(bf^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x/(a+b*f^(2*x))^3,x)
```

```
[Out] 1/8*f^x*(3*ln(f)*b*x*(f^x)^2+5*ln(f)*a*x-b*(f^x)^2-a)/ln(f)^2/a^2
/(a+b*(f^x)^2)^2-1/2/ln(f)^2/a^2/(a*b)^(1/2)*arctan(b*f^x/(a*b)^(
1/2))+3/16/ln(f)/a^2*x/(-a*b)^(1/2)*ln((-b*f^x+(-a*b)^(1/2))/(-a*
b)^(1/2))-3/16/ln(f)/a^2*x/(-a*b)^(1/2)*ln((b*f^x+(-a*b)^(1/2))/(
-a*b)^(1/2))+3/16/ln(f)^2/a^2/(-a*b)^(1/2)*dilog((-b*f^x+(-a*b)^(
1/2))/(-a*b)^(1/2))-3/16/ln(f)^2/a^2/(-a*b)^(1/2)*dilog((b*f^x+(-
a*b)^(1/2))/(-a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.262802, size = 756, normalized size = 3.39

$$2\left(3\,b^{2}x\log\left(f\right)-b^{2}\right)f^{3\,x}+2\left(5\,abx\log\left(f\right)-ab\right)f^{x}+3\left(b^{2}f^{4\,x}\sqrt{-\frac{b}{a}}+2\,abf^{2\,x}\sqrt{-\frac{b}{a}}+a^{2}\sqrt{-\frac{b}{a}}\right)\mathrm{Li}_2\left(-\frac{bf^{x}+a\sqrt{-\frac{b}{a}}}{a\sqrt{-\frac{b}{a}}}+1\right)-3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a)^3,x, algorithm="fricas")
```

```
[Out] 1/16*(2*(3*b^2*x*log(f) - b^2)*f^(3*x) + 2*(5*a*b*x*log(f) - a*b)
*f^x + 3*(b^2*f^(4*x)*sqrt(-b/a) + 2*a*b*f^(2*x)*sqrt(-b/a) + a^2
*sqrt(-b/a))*dilog(-(b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a)) + 1) -
3*(b^2*f^(4*x)*sqrt(-b/a) + 2*a*b*f^(2*x)*sqrt(-b/a) + a^2*sqrt(-
b/a))*dilog((b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/a)) + 1) - 4*(b^2*f
^(4*x)*sqrt(-b/a) + 2*a*b*f^(2*x)*sqrt(-b/a) + a^2*sqrt(-b/a))*lo
g(2*b*f^x + 2*a*sqrt(-b/a)) + 4*(b^2*f^(4*x)*sqrt(-b/a) + 2*a*b*f
^(2*x)*sqrt(-b/a) + a^2*sqrt(-b/a))*log(2*b*f^x - 2*a*sqrt(-b/a))
 + 3*(b^2*f^(4*x)*x*sqrt(-b/a)*log(f) + 2*a*b*f^(2*x)*x*sqrt(-b/a
)*log(f) + a^2*x*sqrt(-b/a)*log(f))*log((b*f^x + a*sqrt(-b/a))/(a
*sqrt(-b/a))) - 3*(b^2*f^(4*x)*x*sqrt(-b/a)*log(f) + 2*a*b*f^(2*x
)*x*sqrt(-b/a)*log(f) + a^2*x*sqrt(-b/a)*log(f))*log(-(b*f^x - a*
sqrt(-b/a))/(a*sqrt(-b/a))))/(a^2*b^3*f^(4*x)*log(f)^2 + 2*a^3*b^
2*f^(2*x)*log(f)^2 + a^4*b*log(f)^2)
```

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

$$\frac{f^{3x}\left(3bx\log\left(f\right)-b\right)+f^{x}\left(5ax\log\left(f\right)-a\right)}{8a^{4}\log\left(f\right)^{2}+16a^{3}bf^{2x}\log\left(f\right)^{2}+8a^{2}b^{2}f^{4x}\log\left(f\right)^{2}}+\frac{\int\left(-\frac{4f^{x}}{a+bf^{2x}}\right)dx+\int\frac{3f^{x}x\log\left(f\right)}{a+bf^{2x}}\,dx}{8a^{2}\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x/(a+b*f**(2*x))**3,x)
```

```
[Out] (f**(3*x)*(3*b*x*log(f) - b) + f**x*(5*a*x*log(f) - a))/(8*a**4*l
og(f)**2 + 16*a**3*b*f**(2*x)*log(f)**2 + 8*a**2*b**2*f**(4*x)*lo
g(f)**2) + (Integral(-4*f**x/(a + b*f**(2*x)), x) + Integral(3*f*
*x*x*log(f)/(a + b*f**(2*x)), x))/(8*a**2*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{x}x}{\left(bf^{2\,x}+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x/(b*f^(2*x) + a)^3,x, algorithm="giac")
```

```
[Out] integrate(f^x*x/(b*f^(2*x) + a)^3, x)
```

3.53 $\int \frac{f^x x^2}{(a+bf^{2x})^3} dx$

Optimal. Leaf size=420

$$\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{5/2}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{5/2}\sqrt{b}\log^3(f)}+\frac{3i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^3(f)}-\frac{3i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^2(f)}+\frac{3ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^2(f)}+\frac{3x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log(f)}+\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}\log^3(f)}-\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}\log^2(f)}+\frac{3x^2f^x}{8a^2\log(f)(a+bf^{2x})}-\frac{xf^x}{4a^2\log^2(f)(a+bf^{2x})}+\frac{x^2f^x}{4a\log(f)(a+bf^{2x})^2}$$

```
[Out] ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(4*a^(5/2)*Sqrt[b]*Log[f]^3) - (f^x
*x)/(4*a^2*(a + b*f^(2*x))*Log[f]^2) - (x*ArcTan[(Sqrt[b]*f^x)/Sq
rt[a]])/(a^(5/2)*Sqrt[b]*Log[f]^2) + (f^x*x^2)/(4*a*(a + b*f^(2*x
))^2*Log[f]) + (3*f^x*x^2)/(8*a^2*(a + b*f^(2*x))*Log[f]) + (3*x^
2*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[b]*Log[f]) + ((I
/2)*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[
f]^3) - (((3*I)/8)*x*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(
5/2)*Sqrt[b]*Log[f]^2) - ((I/2)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a
]])/(a^(5/2)*Sqrt[b]*Log[f]^3) + (((3*I)/8)*x*PolyLog[2, (I*Sqrt[
b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[f]^2) + (((3*I)/8)*PolyLog
[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[f]^3) - (((
3*I)/8)*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log
[f]^3)
```

Rubi [A] time = 0.994313, antiderivative size = 420, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 12, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667

$$\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{5/2}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{2a^{5/2}\sqrt{b}\log^3(f)}+\frac{3i\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^3(f)}-\frac{3i\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^2(f)}+\frac{3ix\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log^2(f)}+\frac{3x^2\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{b}\log(f)}+\frac{\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}\log^3(f)}-\frac{x\tan^{-1}\left(\frac{\sqrt{b}f^x}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}\log^2(f)}+\frac{3x^2f^x}{8a^2\log(f)(a+bf^{2x})}-\frac{xf^x}{4a^2\log^2(f)(a+bf^{2x})}+\frac{x^2f^x}{4a\log(f)(a+bf^{2x})^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(f^x*x^2)/(a + b*f^(2*x))^3,x]
```

```
[Out] ArcTan[(Sqrt[b]*f^x)/Sqrt[a]]/(4*a^(5/2)*Sqrt[b]*Log[f]^3) - (f^x
*x)/(4*a^2*(a + b*f^(2*x))*Log[f]^2) - (x*ArcTan[(Sqrt[b]*f^x)/Sq
rt[a]])/(a^(5/2)*Sqrt[b]*Log[f]^2) + (f^x*x^2)/(4*a*(a + b*f^(2*x
))^2*Log[f]) + (3*f^x*x^2)/(8*a^2*(a + b*f^(2*x))*Log[f]) + (3*x^
2*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[b]*Log[f]) + ((I
/2)*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[
f]^3) - (((3*I)/8)*x*PolyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(
5/2)*Sqrt[b]*Log[f]^2) - ((I/2)*PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a
]])/(a^(5/2)*Sqrt[b]*Log[f]^3) + (((3*I)/8)*x*PolyLog[2, (I*Sqrt[
b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[f]^2) + (((3*I)/8)*PolyLog
[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log[f]^3) - (((
3*I)/8)*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]])/(a^(5/2)*Sqrt[b]*Log
[f]^3)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**x*x**2/(a+b*f**(2*x))**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.750432, size = 353, normalized size = 0.84

$$\frac{3i\left(2\text{PolyLog}\left(3,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-2\text{PolyLog}\left(3,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-2x\log(f)\text{PolyLog}\left(2,-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+2x\log(f)\text{PolyLog}\left(2,\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)+x^2\log^2(f)\log\left(1-\frac{i\sqrt{b}f^x}{\sqrt{a}}\right)-x^2\log^2(f)\log}{\sqrt{a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(f^x*x^2)/(a + b*f^(2*x))^3,x]
```

```
[Out] ((4*ArcTan[(Sqrt[b]*f^x)/Sqrt[a]])/(Sqrt[a]*Sqrt[b]) + (4*a*f^x*x
^2*Log[f]^2)/(a + b*f^(2*x))^2 + (2*f^x*x*Log[f]*(-2 + 3*x*Log[f]
))/(a + b*f^(2*x)) - ((8*I)*(x*Log[f]*(Log[1 - (I*Sqrt[b]*f^x)/Sq
rt[a]] - Log[1 + (I*Sqrt[b]*f^x)/Sqrt[a]]) - PolyLog[2, ((-I)*Sqr
t[b]*f^x)/Sqrt[a]] + PolyLog[2, (I*Sqrt[b]*f^x)/Sqrt[a]]))/(Sqrt[
a]*Sqrt[b]) + ((3*I)*(x^2*Log[f]^2*Log[1 - (I*Sqrt[b]*f^x)/Sqrt[a
]] - x^2*Log[f]^2*Log[1 + (I*Sqrt[b]*f^x)/Sqrt[a]] - 2*x*Log[f]*P
olyLog[2, ((-I)*Sqrt[b]*f^x)/Sqrt[a]] + 2*x*Log[f]*PolyLog[2, (I*
Sqrt[b]*f^x)/Sqrt[a]] + 2*PolyLog[3, ((-I)*Sqrt[b]*f^x)/Sqrt[a]]
- 2*PolyLog[3, (I*Sqrt[b]*f^x)/Sqrt[a]]))/(Sqrt[a]*Sqrt[b]))/(16*
a^2*Log[f]^3)
```

Maple [F] time = 0.115, size = 0, normalized size = 0.

$$\int \frac{f^x x^2}{\left(a+bf^{2x}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^x*x^2/(a+b*f^(2*x))^3,x)
```

```
[Out] int(f^x*x^2/(a+b*f^(2*x))^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.268202, size = 1161, normalized size = 2.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a)^3,x, algorithm="fricas")
```

```
[Out] 1/16*(2*(3*b^2*x^2*log(f)^2 - 2*b^2*x*log(f))*f^(3*x) + 2*(5*a*b*
x^2*log(f)^2 - 2*a*b*x*log(f))*f^x + 2*((3*b^2*x*log(f) - 4*b^2)*
f^(4*x)*sqrt(-b/a) + 2*(3*a*b*x*log(f) - 4*a*b)*f^(2*x)*sqrt(-b/a
) + (3*a^2*x*log(f) - 4*a^2)*sqrt(-b/a))*dilog(-(b*f^x + a*sqrt(-
b/a))/(a*sqrt(-b/a)) + 1) - 2*((3*b^2*x*log(f) - 4*b^2)*f^(4*x)*s
qrt(-b/a) + 2*(3*a*b*x*log(f) - 4*a*b)*f^(2*x)*sqrt(-b/a) + (3*a^
2*x*log(f) - 4*a^2)*sqrt(-b/a))*dilog((b*f^x - a*sqrt(-b/a))/(a*s
qrt(-b/a)) + 1) + 2*(b^2*f^(4*x)*sqrt(-b/a) + 2*a*b*f^(2*x)*sqrt(
-b/a) + a^2*sqrt(-b/a))*log(2*b*f^x + 2*a*sqrt(-b/a)) - 2*(b^2*f^
(4*x)*sqrt(-b/a) + 2*a*b*f^(2*x)*sqrt(-b/a) + a^2*sqrt(-b/a))*log
(2*b*f^x - 2*a*sqrt(-b/a)) + ((3*b^2*x^2*log(f)^2 - 8*b^2*x*log(f
))*f^(4*x)*sqrt(-b/a) + 2*(3*a*b*x^2*log(f)^2 - 8*a*b*x*log(f))*f
^(2*x)*sqrt(-b/a) + (3*a^2*x^2*log(f)^2 - 8*a^2*x*log(f))*sqrt(-b
/a))*log((b*f^x + a*sqrt(-b/a))/(a*sqrt(-b/a))) - ((3*b^2*x^2*log
(f)^2 - 8*b^2*x*log(f))*f^(4*x)*sqrt(-b/a) + 2*(3*a*b*x^2*log(f)^
2 - 8*a*b*x*log(f))*f^(2*x)*sqrt(-b/a) + (3*a^2*x^2*log(f)^2 - 8*
a^2*x*log(f))*sqrt(-b/a))*log(-(b*f^x - a*sqrt(-b/a))/(a*sqrt(-b/
a))) + 6*(b^2*f^(4*x)*sqrt(-b/a) + 2*a*b*f^(2*x)*sqrt(-b/a) + a^2
*sqrt(-b/a))*polylog(3, b*f^x/(a*sqrt(-b/a))) - 6*(b^2*f^(4*x)*sq
rt(-b/a) + 2*a*b*f^(2*x)*sqrt(-b/a) + a^2*sqrt(-b/a))*polylog(3,
-b*f^x/(a*sqrt(-b/a))))/(a^2*b^3*f^(4*x)*log(f)^3 + 2*a^3*b^2*f^(
2*x)*log(f)^3 + a^4*b*log(f)^3)
```

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

$$\frac{f^{3x}\left(3bx^2\log(f)-2bx\right)+f^x\left(5ax^2\log(f)-2ax\right)}{8a^4\log(f)^2+16a^3bf^{2x}\log(f)^2+8a^2b^2f^{4x}\log(f)^2}+\frac{\int\frac{2f^x}{a+bf^{2x}}\,dx+\int\left(-\frac{8f^x x\log(f)}{a+bf^{2x}}\right)dx+\int\frac{3f^x x^2\log(f)^2}{a+bf^{2x}}\,dx}{8a^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**x*x**2/(a+b*f**(2*x))**3,x)
```

```
[Out] (f**(3*x)*(3*b*x**2*log(f) - 2*b*x) + f**x*(5*a*x**2*log(f) - 2*a
*x))/(8*a**4*log(f)**2 + 16*a**3*b*f**(2*x)*log(f)**2 + 8*a**2*b*
*2*f**(4*x)*log(f)**2) + (Integral(2*f**x/(a + b*f**(2*x)), x) +
Integral(-8*f**x*x*log(f)/(a + b*f**(2*x)), x) + Integral(3*f**x*
x**2*log(f)**2/(a + b*f**(2*x)), x))/(8*a**2*log(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^x x^2}{\left(bf^{2x}+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^x*x^2/(b*f^(2*x) + a)^3,x, algorithm="giac")
```

```
[Out] integrate(f^x*x^2/(b*f^(2*x) + a)^3, x)
```

3.54 $\int \frac{1}{bf^{-x}+af^x}\,dx$

Optimal. Leaf size=30

$$\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(Sqrt[a]*Sqrt[b]*Log[f])
```

Rubi [A] time = 0.0420058, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[(b/f^x + a*f^x)^(-1),x]
```

```
[Out] ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(Sqrt[a]*Sqrt[b]*Log[f])
```

Rubi in Sympy [A] time = 15.3838, size = 29, normalized size = 0.97

$$-\frac{\operatorname{atan}\left(\frac{\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b/(f**x)+a*f**x),x)
```

```
[Out] -atan(sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f))
```

Mathematica [A] time = 0.0116893, size = 30, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b/f^x + a*f^x)^(-1),x]
```

```
[Out] ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(Sqrt[a]*Sqrt[b]*Log[f])
```

Maple [A] time = 0.004, size = 22, normalized size = 0.7

$$\frac{1}{\ln(f)}\arctan\left(af^x\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b/(f^x)+a*f^x),x)

[Out] 1/ln(f)/(a*b)^(1/2)*arctan(a*f^x/(a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*f^x + b/f^x),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.238192, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\,abf^{x}+\sqrt{-ab}af^{2\,x}-\sqrt{-ab}b}{af^{2\,x}+b}\right)}{2\,\sqrt{-ab}\log\left(f\right)},-\frac{\arctan\left(\frac{b}{\sqrt{ab}f^{x}}\right)}{\sqrt{ab}\log\left(f\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*f^x + b/f^x),x, algorithm="fricas")

[Out] [1/2*log((2*a*b*f^x + sqrt(-a*b)*a*f^(2*x) - sqrt(-a*b)*b)/(a*f^(
2*x) + b))/(sqrt(-a*b)*log(f)), -arctan(b/(sqrt(a*b)*f^x))/(sqrt(
a*b)*log(f))]
```

Sympy [A] time = 0.401547, size = 26, normalized size = 0.87

$$\frac{\operatorname{RootSum}\left(4z^{2}ab+1,\left(i\mapsto i\log\left(-2ia+f^{-x}\right)\right)\right)}{\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b/(f**x)+a*f**x),x)

[Out] RootSum(4*_z**2*a*b + 1, Lambda(_i, _i*log(-2*_i*a + f**(-x))))/l
og(f)
```

GIAC/XCAS [A] time = 0.237094, size = 28, normalized size = 0.93

$$\frac{\arctan\left(\frac{af^{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*f^x + b/f^x),x, algorithm="giac")

[Out] arctan(a*f^x/sqrt(a*b))/(sqrt(a*b)*ln(f))
```

3.55 $\int \frac{x}{bf^{-x}+af^x}\,dx$

Optimal. Leaf size=110

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] (x*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((I/
2)*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + ((I/2)*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[
b]*Log[f]^2)
```

Rubi [A] time = 0.158873, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.353

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(b/f^x + a*f^x),x]
```

```
[Out] (x*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((I/
2)*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + ((I/2)*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[
b]*Log[f]^2)
```

Rubi in Sympy [A] time = 35.7219, size = 102, normalized size = 0.93

$$-\frac{x\,\text{atan}\left(\frac{\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}-\frac{i\,\text{Li}_2\left(-\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}+\frac{i\,\text{Li}_2\left(\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b/(f**x)+a*f**x),x)
```

```
[Out] -x*atan(sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)) - I*pol
ylog(2, -I*sqrt(b)*f**(-x)/sqrt(a))/(2*sqrt(a)*sqrt(b)*log(f)**2)
 + I*polylog(2, I*sqrt(b)*f**(-x)/sqrt(a))/(2*sqrt(a)*sqrt(b)*log
(f)**2)
```

Mathematica [A] time = 0.061359, size = 108, normalized size = 0.98

$$\frac{i\left(-\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+x\log(f)\left(\log\left(1-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-\log\left(1+\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)\right)\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(b/f^x + a*f^x),x]
```

```
[Out] ((I/2)*(x*Log[f]*(Log[1 - (I*Sqrt[a]*f^x)/Sqrt[b]] - Log[1 + (I*S
qrt[a]*f^x)/Sqrt[b]]) - PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]] +
```

```
PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]]))/(Sqrt[a]*Sqrt[b]*Log[f]^2)
```

Maple [C] time = 0.037, size = 134, normalized size = 1.2

$$\frac{x}{2\ln(f)}\ln\left(1\left(-af^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}-\frac{x}{2\ln(f)}\ln\left(1\left(af^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}+\frac{1}{2\left(\ln(f)\right)^{2}}dilog\left(1\left(-af^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}-\frac{1}{2\left(\ln(f)\right)^{2}}dilog\left(1\left(af^{x}+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b/(f^x)+a*f^x),x)
```

```
[Out] 1/2/ln(f)*x/(-a*b)^(1/2)*ln((-a*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1
/2/ln(f)*x/(-a*b)^(1/2)*ln((a*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))+1/2
/ln(f)^2/(-a*b)^(1/2)*dilog((-a*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))-1
/2/ln(f)^2/(-a*b)^(1/2)*dilog((a*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.25006, size = 240, normalized size = 2.18

$$\frac{x\sqrt{-\frac{a}{b}}\log(f)\log\left(\frac{af^{x}+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}\right)-x\sqrt{-\frac{a}{b}}\log(f)\log\left(-\frac{af^{x}-b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}\right)+\sqrt{-\frac{a}{b}}\mathrm{Li}_2\left(-\frac{af^{x}+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)-\sqrt{-\frac{a}{b}}\mathrm{Li}_2\left(\frac{af^{x}-b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)}{2\,a\log(f)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x),x, algorithm="fricas")
```

```
[Out] 1/2*(x*sqrt(-a/b)*log(f)*log((a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b)
)) - x*sqrt(-a/b)*log(f)*log(-(a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b
))) + sqrt(-a/b)*dilog(-(a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b)) + 1
) - sqrt(-a/b)*dilog((a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b)) + 1))/
(a*log(f)^2)
```

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

$$\int\frac{f^{x}x}{af^{2x}+b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b/(f**x)+a*f**x),x)

[Out] Integral(f**x*x/(a*f**(2*x) + b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{af^x + \frac{b}{f^x}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x),x, algorithm="giac")

[Out] integrate(x/(a*f^x + b/f^x), x)
```

3.56 $\int \frac{x^2}{bf^{-x}+af^x}\,dx$

Optimal. Leaf size=184

$$\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] (x^2*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]) - (I
*x*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + (I*x*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]
*Log[f]^2) + (I*PolyLog[3, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*
Sqrt[b]*Log[f]^3) - (I*PolyLog[3, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt
[a]*Sqrt[b]*Log[f]^3)
```

Rubi [A] time = 0.298495, antiderivative size = 184, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368

$$\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(b/f^x + a*f^x),x]
```

```
[Out] (x^2*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]) - (I
*x*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f
]^2) + (I*x*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]
*Log[f]^2) + (I*PolyLog[3, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*
Sqrt[b]*Log[f]^3) - (I*PolyLog[3, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt
[a]*Sqrt[b]*Log[f]^3)
```

Rubi in Sympy [A] time = 84.3992, size = 173, normalized size = 0.94

$$-\frac{x^2\,\text{atan}\left(\frac{\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}-\frac{ix\,\text{Li}_2\left(-\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^2}+\frac{ix\,\text{Li}_2\left(\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^2}-\frac{i\,\text{Li}_3\left(-\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}+\frac{i\,\text{Li}_3\left(\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b/(f**x)+a*f**x),x)
```

```
[Out] -x**2*atan(sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)) - I*
x*polylog(2, -I*sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)*
*2) + I*x*polylog(2, I*sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*
log(f)**2) - I*polylog(3, -I*sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sq
rt(b)*log(f)**3) + I*polylog(3, I*sqrt(b)*f**(-x)/sqrt(a))/(sqrt(
a)*sqrt(b)*log(f)**3)
```

Mathematica [A] time = 0.0436982, size = 168, normalized size = 0.91

$$\frac{i\left(2\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-2\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-2x\log(f)\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+2x\log(f)\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+x^2\log^2\right.}{2\sqrt{a}\sqrt{b}\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(b/f^x + a*f^x),x]
```

```
[Out] ((I/2)*(x^2*Log[f]^2*Log[1 - (I*Sqrt[a]*f^x)/Sqrt[b]] - x^2*Log[f
]^2*Log[1 + (I*Sqrt[a]*f^x)/Sqrt[b]] - 2*x*Log[f]*PolyLog[2, ((-I
)*Sqrt[a]*f^x)/Sqrt[b]] + 2*x*Log[f]*PolyLog[2, (I*Sqrt[a]*f^x)/S
qrt[b]] + 2*PolyLog[3, ((-I)*Sqrt[a]*f^x)/Sqrt[b]] - 2*PolyLog[3,
 (I*Sqrt[a]*f^x)/Sqrt[b]]))/(Sqrt[a]*Sqrt[b]*Log[f]^3)
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int x^2\left(\frac{b}{f^x}+af^x\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b/(f^x)+a*f^x),x)
```

```
[Out] int(x^2/(b/(f^x)+a*f^x),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.252257, size = 338, normalized size = 1.84

$$\frac{x^2\sqrt{-\frac{a}{b}}\log(f)^2\log\left(\frac{af^x+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}\right)-x^2\sqrt{-\frac{a}{b}}\log(f)^2\log\left(-\frac{af^x-b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}\right)+2x\sqrt{-\frac{a}{b}}\text{Li}_2\left(-\frac{af^x+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)\log(f)-2x\sqrt{-\frac{a}{b}}\text{Li}}{2a\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x),x, algorithm="fricas")
```

```
[Out] 1/2*(x^2*sqrt(-a/b)*log(f)^2*log((a*f^x + b*sqrt(-a/b))/(b*sqrt(-
a/b))) - x^2*sqrt(-a/b)*log(f)^2*log(-(a*f^x - b*sqrt(-a/b))/(b*s
qrt(-a/b))) + 2*x*sqrt(-a/b)*dilog(-(a*f^x + b*sqrt(-a/b))/(b*sqr
t(-a/b)) + 1)*log(f) - 2*x*sqrt(-a/b)*dilog((a*f^x - b*sqrt(-a/b)
)/(b*sqrt(-a/b)) + 1)*log(f) + 2*sqrt(-a/b)*polylog(3, a*f^x/(b*s
qrt(-a/b))) - 2*sqrt(-a/b)*polylog(3, -a*f^x/(b*sqrt(-a/b))))/(a*
log(f)^3)
```

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

$$\int \frac{f^x x^2}{af^{2x} + b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b/(f**x)+a*f**x),x)

[Out] Integral(f**x*x**2/(a*f**(2*x) + b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{af^x + \frac{b}{f^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x),x, algorithm="giac")

[Out] integrate(x^2/(a*f^x + b/f^x), x)
```

3.57 $\int \frac{x^3}{bf^{-x}+af^x}\,dx$

Optimal. Leaf size=268

$$-\frac{3ix^2\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{3ix^2\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}-\frac{3i\text{PolyLog}\left(4,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(4,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3ix\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}+\frac{x^3\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

```
[Out] (x^3*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((
(3*I)/2)*x^2*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqr
t[b]*Log[f]^2) + (((3*I)/2)*x^2*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b
]])/(Sqrt[a]*Sqrt[b]*Log[f]^2) + ((3*I)*x*PolyLog[3, ((-I)*Sqrt[a
]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*x*PolyLog[3,
 (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*Po
lyLog[4, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]^4)
+ ((3*I)*PolyLog[4, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Lo
g[f]^4)
```

Rubi [A] time = 0.3977, antiderivative size = 268, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$-\frac{3ix^2\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}+\frac{3ix^2\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{2\sqrt{a}\sqrt{b}\log^2(f)}-\frac{3i\text{PolyLog}\left(4,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3i\text{PolyLog}\left(4,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^4(f)}+\frac{3ix\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}-\frac{3ix\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log^3(f)}+\frac{x^3\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{\sqrt{a}\sqrt{b}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(b/f^x + a*f^x),x]
```

```
[Out] (x^3*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]) - ((
(3*I)/2)*x^2*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqr
t[b]*Log[f]^2) + (((3*I)/2)*x^2*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b
]])/(Sqrt[a]*Sqrt[b]*Log[f]^2) + ((3*I)*x*PolyLog[3, ((-I)*Sqrt[a
]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*x*PolyLog[3,
 (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]^3) - ((3*I)*Po
lyLog[4, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Log[f]^4)
+ ((3*I)*PolyLog[4, (I*Sqrt[a]*f^x)/Sqrt[b]])/(Sqrt[a]*Sqrt[b]*Lo
g[f]^4)
```

Rubi in Sympy [A] time = 102.562, size = 264, normalized size = 0.99

$$-\frac{x^3\,\text{atan}\left(\frac{\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)}-\frac{3ix^2\,\text{Li}_2\left(-\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}+\frac{3ix^2\,\text{Li}_2\left(\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{2\sqrt{a}\sqrt{b}\log(f)^2}-\frac{3ix\,\text{Li}_3\left(-\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}+\frac{3ix\,\text{Li}_3\left(\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^3}-\frac{3i\,\text{Li}_4\left(-\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^4}+\frac{3i\,\text{Li}_4\left(\frac{i\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b/(f**x)+a*f**x),x)
```

```
[Out] -x**3*atan(sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)) - 3*
I*x**2*polylog(2, -I*sqrt(b)*f**(-x)/sqrt(a))/(2*sqrt(a)*sqrt(b)*
```

```
log(f)**2) + 3*I*x**2*polylog(2, I*sqrt(b)*f**(-x)/sqrt(a))/(2*sq
rt(a)*sqrt(b)*log(f)**2) - 3*I*x*polylog(3, -I*sqrt(b)*f**(-x)/sq
rt(a))/(sqrt(a)*sqrt(b)*log(f)**3) + 3*I*x*polylog(3, I*sqrt(b)*f
**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)**3) - 3*I*polylog(4, -I*s
qrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)**4) + 3*I*polylog
(4, I*sqrt(b)*f**(-x)/sqrt(a))/(sqrt(a)*sqrt(b)*log(f)**4)
```

Mathematica [A] time = 0.0521668, size = 224, normalized size = 0.84

$$\frac{i\left(-3x^2\log^2(f)\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+3x^2\log^2(f)\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-6\text{PolyLog}\left(4,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+6\text{PolyLog}\left(4,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+6\right.}{2\sqrt{a}\sqrt{b}1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(b/f^x + a*f^x),x]
```

```
[Out] ((I/2)*(x^3*Log[f]^3*Log[1 - (I*Sqrt[a]*f^x)/Sqrt[b]] - x^3*Log[f
]^3*Log[1 + (I*Sqrt[a]*f^x)/Sqrt[b]] - 3*x^2*Log[f]^2*PolyLog[2,
((-I)*Sqrt[a]*f^x)/Sqrt[b]] + 3*x^2*Log[f]^2*PolyLog[2, (I*Sqrt[a
]*f^x)/Sqrt[b]] + 6*x*Log[f]*PolyLog[3, ((-I)*Sqrt[a]*f^x)/Sqrt[b
]] - 6*x*Log[f]*PolyLog[3, (I*Sqrt[a]*f^x)/Sqrt[b]] - 6*PolyLog[4
, ((-I)*Sqrt[a]*f^x)/Sqrt[b]] + 6*PolyLog[4, (I*Sqrt[a]*f^x)/Sqrt
[b]]))/(Sqrt[a]*Sqrt[b]*Log[f]^4)
```

Maple [F] time = 0.03, size = 0, normalized size = 0.

$$\int x^3\left(\frac{b}{f^x}+af^x\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b/(f^x)+a*f^x),x)
```

```
[Out] int(x^3/(b/(f^x)+a*f^x),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(a*f^x + b/f^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.255991, size = 433, normalized size = 1.62

$$\frac{x^3\sqrt{-\frac{a}{b}}\log(f)^3\log\left(\frac{af^x+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}\right)-x^3\sqrt{-\frac{a}{b}}\log(f)^3\log\left(-\frac{af^x-b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}\right)+3x^2\sqrt{-\frac{a}{b}}\text{Li}_2\left(-\frac{af^x+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)\log(f)^2-3x^2\sqrt{-\frac{}{}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(a*f^x + b/f^x),x, algorithm="fricas")
```

```
[Out] 1/2*(x^3*sqrt(-a/b)*log(f)^3*log((a*f^x + b*sqrt(-a/b))/(b*sqrt(-
a/b))) - x^3*sqrt(-a/b)*log(f)^3*log(-(a*f^x - b*sqrt(-a/b))/(b*s
qrt(-a/b))) + 3*x^2*sqrt(-a/b)*dilog(-(a*f^x + b*sqrt(-a/b))/(b*s
qrt(-a/b)) + 1)*log(f)^2 - 3*x^2*sqrt(-a/b)*dilog((a*f^x - b*sqrt
(-a/b))/(b*sqrt(-a/b)) + 1)*log(f)^2 + 6*x*sqrt(-a/b)*log(f)*poly
log(3, a*f^x/(b*sqrt(-a/b))) - 6*x*sqrt(-a/b)*log(f)*polylog(3, -
a*f^x/(b*sqrt(-a/b))) - 6*sqrt(-a/b)*polylog(4, a*f^x/(b*sqrt(-a/
b))) + 6*sqrt(-a/b)*polylog(4, -a*f^x/(b*sqrt(-a/b))))/(a*log(f)^
4)
```

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

$$\int \frac{f^x x^3}{af^{2x} + b}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b/(f**x)+a*f**x),x)
```

```
[Out] Integral(f**x*x**3/(a*f**(2*x) + b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3}{af^x + \frac{b}{f^x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(a*f^x + b/f^x),x, algorithm="giac")
```

```
[Out] integrate(x^3/(a*f^x + b/f^x), x)
```

3.58 $\int \frac{1}{(bf^{-x}+af^x)^2}\,dx$

Optimal. Leaf size=22

$$-\frac{1}{2a\log(f)\left(af^{2x}+b\right)}$$

```
[Out] -1/(2*a*(b + a*f^(2*x))*Log[f])
```

Rubi [A] time = 0.0348567, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{1}{2a\log(f)\left(af^{2x}+b\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[(b/f^x + a*f^x)^(-2),x]

[Out] -1/(2*a*(b + a*f^(2*x))*Log[f])
```

Rubi in Sympy [A] time = 8.54269, size = 15, normalized size = 0.68

$$\frac{1}{2b\left(a+bf^{-2x}\right)\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b/(f**x)+a*f**x)**2,x)

[Out] 1/(2*b*(a + b*f**(-2*x))*log(f))
```

Mathematica [A] time = 0.0213169, size = 23, normalized size = 1.05

$$-\frac{1}{2a^2f^{2x}\log(f)+2ab\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b/f^x + a*f^x)^(-2),x]

[Out] -(2*a*b*Log[f] + 2*a^2*f^(2*x)*Log[f])^(-1)
```

Maple [A] time = 0.004, size = 21, normalized size = 1.

$$-\frac{1}{2\ln\left(f\right)a\left(a\left(f^x\right)^2+b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b/(f^x)+a*f^x)^2,x)
```

```
[Out] -1/2/ln(f)/a/(a*(f^x)^2+b)
```

Maxima [A] time = 0.752802, size = 31, normalized size = 1.41

$$\frac{1}{2\left(ab+\frac{b^2}{f^{2x}}\right)\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*f^x + b/f^x)^(-2),x, algorithm="maxima")
```

```
[Out] 1/2/((a*b + b^2/f^(2*x))*log(f))
```

Fricas [A] time = 0.251931, size = 28, normalized size = 1.27

$$-\frac{1}{2\left(a^2f^{2x}\log(f)+ab\log(f)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*f^x + b/f^x)^(-2),x, algorithm="fricas")
```

```
[Out] -1/2/(a^2*f^(2*x)*log(f) + a*b*log(f))
```

Sympy [A] time = 0.227472, size = 22, normalized size = 1.

$$\frac{1}{2ab\log(f)+2b^2f^{-2x}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] 1/(2*a*b*log(f) + 2*b**2*f**(-2*x)*log(f))
```

GIAC/XCAS [A] time = 0.236256, size = 27, normalized size = 1.23

$$-\frac{1}{2\left(af^{2x}+b\right)a\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*f^x + b/f^x)^(-2),x, algorithm="giac")
```

```
[Out] -1/2/((a*f^(2*x) + b)*a*ln(f))
```

3.59 $\int \frac{x}{(bf^{-x}+af^{x})^2} \, dx$

Optimal. Leaf size=63

$$-\frac{\log\left(af^{2x}+b\right)}{4ab\log^2(f)}-\frac{x}{2a\log(f)\left(af^{2x}+b\right)}+\frac{x}{2ab\log(f)}$$

```
[Out] x/(2*a*b*Log[f]) - x/(2*a*(b + a*f^(2*x))*Log[f]) - Log[b + a*f^(
2*x)]/(4*a*b*Log[f]^2)
```

Rubi [A] time = 0.132029, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.353$

$$-\frac{\log\left(af^{2x}+b\right)}{4ab\log^2(f)}-\frac{x}{2a\log(f)\left(af^{2x}+b\right)}+\frac{x}{2ab\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(b/f^x + a*f^x)^2,x]
```

```
[Out] x/(2*a*b*Log[f]) - x/(2*a*(b + a*f^(2*x))*Log[f]) - Log[b + a*f^(
2*x)]/(4*a*b*Log[f]^2)
```

Rubi in Sympy [A] time = 18.8979, size = 54, normalized size = 0.86

$$\frac{x}{2b\left(a+bf^{-2x}\right)\log(f)}+\frac{\log\left(f^{-2x}\right)}{4ab\log(f)^2}-\frac{\log\left(a+bf^{-2x}\right)}{4ab\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] x/(2*b*(a + b*f**(-2*x))*log(f)) + log(f**(-2*x))/(4*a*b*log(f)**
2) - log(a + b*f**(-2*x))/(4*a*b*log(f)**2)
```

Mathematica [A] time = 0.0511954, size = 48, normalized size = 0.76

$$\frac{\frac{2xf^{2x}\log(f)}{af^{2x}+b}-\frac{\log\left(af^{2x}+b\right)}{a}}{4b\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(b/f^x + a*f^x)^2,x]
```

```
[Out] ((2*f^(2*x)*x*Log[f])/(b + a*f^(2*x)) - Log[b + a*f^(2*x)]/a)/(4*
b*Log[f]^2)
```

Maple [A] time = 0.025, size = 56, normalized size = 0.9

$$\frac{x\left(e^{x\ln(f)}\right)^2}{2b\ln(f)\left(\left(e^{x\ln(f)}\right)^2a+b\right)}-\frac{\ln\left(\left(e^{x\ln(f)}\right)^2a+b\right)}{4(\ln(f))^2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b/(f^x)+a*f^x)^2,x)
```

```
[Out] 1/2/b/ln(f)*x*exp(x*ln(f))^2/(exp(x*ln(f))^2*a+b)-1/4/ln(f)^2/a/b
*ln(exp(x*ln(f))^2*a+b)
```

Maxima [A] time = 0.750055, size = 73, normalized size = 1.16

$$\frac{f^{2x}x}{2\left(abf^{2x}\log\left(f\right)+b^2\log\left(f\right)\right)}-\frac{\log\left(\frac{af^{2x}+b}{a}\right)}{4\,ab\log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x)^2,x, algorithm="maxima")
```

```
[Out] 1/2*f^(2*x)*x/(a*b*f^(2*x)*log(f) + b^2*log(f)) - 1/4*log((a*f^(2
*x) + b)/a)/(a*b*log(f)^2)
```

Fricas [A] time = 0.28771, size = 82, normalized size = 1.3

$$\frac{2\,af^{2x}x\log\left(f\right)-\left(af^{2x}+b\right)\log\left(af^{2x}+b\right)}{4\left(a^2bf^{2x}\log\left(f\right)^2+ab^2\log\left(f\right)^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*a*f^(2*x)*x*log(f) - (a*f^(2*x) + b)*log(a*f^(2*x) + b))/(
a^2*b*f^(2*x)*log(f)^2 + a*b^2*log(f)^2)
```

Sympy [A] time = 0.425385, size = 54, normalized size = 0.86

$$\frac{x}{2ab\log\left(f\right)+2b^2f^{-2x}\log\left(f\right)}-\frac{x}{2ab\log\left(f\right)}-\frac{\log\left(\frac{a}{b}+f^{-2x}\right)}{4ab\log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] x/(2*a*b*log(f) + 2*b**2*f**(-2*x)*log(f)) - x/(2*a*b*log(f)) - l
og(a/b + f**(-2*x))/(4*a*b*log(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x}{\left(af^x+\frac{b}{f^x}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x)^2,x, algorithm="giac")

[Out] integrate(x/(a*f^x + b/f^x)^2, x)
```

3.60 $\int \frac{x^2}{(bf^{-x}+af^x)^2}\,dx$

Optimal. Leaf size=98

$$-\frac{\text{PolyLog}\left(2,-\frac{af^{2x}}{b}\right)}{4ab\log^3(f)}-\frac{x^2}{2a\log(f)\left(af^{2x}+b\right)}-\frac{x\log\left(\frac{af^{2x}}{b}+1\right)}{2ab\log^2(f)}+\frac{x^2}{2ab\log(f)}$$

```
[Out] x^2/(2*a*b*Log[f]) - x^2/(2*a*(b + a*f^(2*x))*Log[f]) - (x*Log[1
+ (a*f^(2*x))/b])/(2*a*b*Log[f]^2) - PolyLog[2, -((a*f^(2*x))/b)]
/(4*a*b*Log[f]^3)
```

Rubi [A] time = 0.268104, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$-\frac{\text{PolyLog}\left(2,-\frac{af^{2x}}{b}\right)}{4ab\log^3(f)}-\frac{x^2}{2a\log(f)\left(af^{2x}+b\right)}-\frac{x\log\left(\frac{af^{2x}}{b}+1\right)}{2ab\log^2(f)}+\frac{x^2}{2ab\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(b/f^x + a*f^x)^2,x]
```

```
[Out] x^2/(2*a*b*Log[f]) - x^2/(2*a*(b + a*f^(2*x))*Log[f]) - (x*Log[1
+ (a*f^(2*x))/b])/(2*a*b*Log[f]^2) - PolyLog[2, -((a*f^(2*x))/b)]
/(4*a*b*Log[f]^3)
```

Rubi in Sympy [A] time = 27.7626, size = 63, normalized size = 0.64

$$\frac{x^2}{2b\left(a+bf^{-2x}\right)\log(f)}-\frac{x\log\left(\frac{af^{2x}}{b}+1\right)}{2ab\log(f)^2}-\frac{\text{Li}_2\left(-\frac{af^{2x}}{b}\right)}{4ab\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] x**2/(2*b*(a + b*f**(-2*x))*log(f)) - x*log(a*f**(2*x)/b + 1)/(2*
a*b*log(f)**2) - polylog(2, -a*f**(2*x)/b)/(4*a*b*log(f)**3)
```

Mathematica [A] time = 0.0741577, size = 90, normalized size = 0.92

$$\frac{2x\log(f)\left(axf^{2x}\log(f)-\left(af^{2x}+b\right)\log\left(\frac{af^{2x}}{b}+1\right)\right)-\left(af^{2x}+b\right)\text{PolyLog}\left(2,-\frac{af^{2x}}{b}\right)}{4ab\log^3(f)\left(af^{2x}+b\right)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(b/f^x + a*f^x)^2,x]
```

```
[Out] (2*x*Log[f]*(a*f^(2*x)*x*Log[f] - (b + a*f^(2*x))*Log[1 + (a*f^(2
*x))/b]) - (b + a*f^(2*x))*PolyLog[2, -((a*f^(2*x))/b)])/(4*a*b*(
b + a*f^(2*x))*Log[f]^3)
```

Maple [A] time = 0.04, size = 91, normalized size = 0.9

$$-\frac{x^{2}}{2\ln\left(f\right)a\left(a\left(f^{x}\right)^{2}+b\right)}+\frac{x^{2}}{2\ln\left(f\right)ab}-\frac{x}{2\left(\ln\left(f\right)\right)^{2}ab}\ln\left(1+\frac{af^{2x}}{b}\right)-\frac{1}{4ab\left(\ln\left(f\right)\right)^{3}}\mathit{polylog}\left(2,-\frac{af^{2x}}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b/(f^x)+a*f^x)^2,x)
```

```
[Out] -1/2/ln(f)*x^2/a/(a*(f^x)^2+b)+1/2*x^2/a/b/ln(f)-1/2*x*ln(1+a*f^(
2*x)/b)/a/b/ln(f)^2-1/4*polylog(2,-a*f^(2*x)/b)/a/b/ln(f)^3
```

Maxima [A] time = 0.787106, size = 117, normalized size = 1.19

$$-\frac{x^{2}}{2\left(a^{2}f^{2x}\log\left(f\right)+ab\log\left(f\right)\right)}+\frac{\log\left(f^{x}\right)^{2}}{2ab\log\left(f\right)^{3}}-\frac{2\log\left(f^{x}\right)\log\left(\frac{af^{2x}}{b}+1\right)+\mathrm{Li}_2\left(-\frac{af^{2x}}{b}\right)}{4ab\log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x)^2,x, algorithm="maxima")
```

```
[Out] -1/2*x^2/(a^2*f^(2*x)*log(f) + a*b*log(f)) + 1/2*log(f^x)^2/(a*b*
log(f)^3) - 1/4*(2*log(f^x)*log(a*f^(2*x)/b + 1) + dilog(-a*f^(2*
x)/b))/(a*b*log(f)^3)
```

Fricas [A] time = 0.293492, size = 304, normalized size = 3.1

$$\frac{af^{2x}x^{2}\log\left(f\right)^{2}-\left(af^{2x}+b\right)\mathrm{Li}_2\left(-\frac{af^{x}+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)-\left(af^{2x}+b\right)\mathrm{Li}_2\left(\frac{af^{x}-b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)-\left(af^{2x}x\log\left(f\right)+bx\log\left(f\right)\right)\log\left(\right.}{2\left(a^{2}bf^{2x}\log\left(f\right)^{3}+ab^{2}\log\left(f\right)^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(a*f^(2*x)*x^2*log(f)^2 - (a*f^(2*x) + b)*dilog(-(a*f^x + b*s
qrt(-a/b))/(b*sqrt(-a/b)) + 1) - (a*f^(2*x) + b)*dilog((a*f^x - b
*sqrt(-a/b))/(b*sqrt(-a/b)) + 1) - (a*f^(2*x)*x*log(f) + b*x*log(
f))*log((a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b))) - (a*f^(2*x)*x*log
(f) + b*x*log(f))*log(-(a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b))))/(a
^2*b*f^(2*x)*log(f)^3 + a*b^2*log(f)^3)
```

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

$$\frac{x^{2}}{2ab\log\left(f\right)+2b^{2}f^{-2x}\log\left(f\right)}-\frac{\int\frac{f^{2x}x}{af^{2x}+b}\,dx}{b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] x**2/(2*a*b*log(f) + 2*b**2*f**(-2*x)*log(f)) - Integral(f**(2*x)
*x/(a*f**(2*x) + b), x)/(b*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\left(af^x + \frac{b}{f^x}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x)^2,x, algorithm="giac")
```

```
[Out] integrate(x^2/(a*f^x + b/f^x)^2, x)
```

3.61 $\int \frac{x^3}{(bf^{-x}+af^x)^2}\,dx$

Optimal. Leaf size=128

$$\frac{3\text{PolyLog}\left(3,-\frac{af^{2x}}{b}\right)}{8ab\log^4(f)}-\frac{3x\text{PolyLog}\left(2,-\frac{af^{2x}}{b}\right)}{4ab\log^3(f)}-\frac{x^3}{2a\log(f)\left(af^{2x}+b\right)}-\frac{3x^2\log\left(\frac{af^{2x}}{b}+1\right)}{4ab\log^2(f)}+\frac{x^3}{2ab\log(f)}$$

```
[Out] x^3/(2*a*b*Log[f]) - x^3/(2*a*(b + a*f^(2*x))*Log[f]) - (3*x^2*Lo
g[1 + (a*f^(2*x))/b])/(4*a*b*Log[f]^2) - (3*x*PolyLog[2, -((a*f^(
2*x))/b)])/(4*a*b*Log[f]^3) + (3*PolyLog[3, -((a*f^(2*x))/b)])/(8
*a*b*Log[f]^4)
```

Rubi [A] time = 0.355517, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368

$$\frac{3\text{PolyLog}\left(3,-\frac{af^{2x}}{b}\right)}{8ab\log^4(f)}-\frac{3x\text{PolyLog}\left(2,-\frac{af^{2x}}{b}\right)}{4ab\log^3(f)}-\frac{x^3}{2a\log(f)\left(af^{2x}+b\right)}-\frac{3x^2\log\left(\frac{af^{2x}}{b}+1\right)}{4ab\log^2(f)}+\frac{x^3}{2ab\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(b/f^x + a*f^x)^2,x]
```

```
[Out] x^3/(2*a*b*Log[f]) - x^3/(2*a*(b + a*f^(2*x))*Log[f]) - (3*x^2*Lo
g[1 + (a*f^(2*x))/b])/(4*a*b*Log[f]^2) - (3*x*PolyLog[2, -((a*f^(
2*x))/b)])/(4*a*b*Log[f]^3) + (3*PolyLog[3, -((a*f^(2*x))/b)])/(8
*a*b*Log[f]^4)
```

Rubi in Sympy [A] time = 35.5003, size = 94, normalized size = 0.73

$$\frac{x^3}{2b\left(a+bf^{-2x}\right)\log(f)}-\frac{3x^2\log\left(\frac{af^{2x}}{b}+1\right)}{4ab\log(f)^2}-\frac{3x\,\text{Li}_2\left(-\frac{af^{2x}}{b}\right)}{4ab\log(f)^3}+\frac{3\,\text{Li}_3\left(-\frac{af^{2x}}{b}\right)}{8ab\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] x**3/(2*b*(a + b*f**(-2*x))*log(f)) - 3*x**2*log(a*f**(2*x)/b + 1
)/(4*a*b*log(f)**2) - 3*x*polylog(2, -a*f**(2*x)/b)/(4*a*b*log(f)
**3) + 3*polylog(3, -a*f**(2*x)/b)/(8*a*b*log(f)**4)
```

Mathematica [A] time = 0.0988098, size = 124, normalized size = 0.97

$$\frac{3\left(\frac{\text{PolyLog}\left(3,-\frac{af^{2x}}{b}\right)}{4b\log^3(f)}-\frac{x\text{PolyLog}\left(2,-\frac{af^{2x}}{b}\right)}{2b\log^2(f)}-\frac{x^2\log\left(\frac{af^{2x}}{b}+1\right)}{2b\log(f)}+\frac{x^3}{3b}\right)}{2a\log(f)}-\frac{x^3}{2a\log(f)\left(af^{2x}+b\right)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(b/f^x + a*f^x)^2,x]
```

```
[Out] -x^3/(2*a*(b + a*f^(2*x))*Log[f]) + (3*(x^3/(3*b) - (x^2*Log[1 +
(a*f^(2*x))/b])/(2*b*Log[f]) - (x*PolyLog[2, -((a*f^(2*x))/b)])/(
```

```
2*b*Log[f]^2) + PolyLog[3, -((a*f^(2*x))/b)]/(4*b*Log[f]^3)))/(2*
a*Log[f])
```

Maple [A] time = 0.049, size = 119, normalized size = 0.9

$$-\frac{x^3}{2\ln(f)\,a\left(a\,(f^x)^2+b\right)}+\frac{x^3}{2\ln(f)\,ab}-\frac{3\,x^2}{4\,(\ln(f))^2\,ab}\ln\left(1+\frac{af^{2\,x}}{b}\right)-\frac{3\,x}{4\,ab\,(\ln(f))^3}polylog\left(2,-\frac{af^{2\,x}}{b}\right)+\frac{3}{8\,ab\,(\ln(f))^4}polylog\left(3,-\frac{af^{2\,x}}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b/(f^x)+a*f^x)^2,x)
```

```
[Out] -1/2/ln(f)*x^3/a/(a*(f^x)^2+b)+1/2*x^3/a/b/ln(f)-3/4*x^2*ln(1+a*f
^(2*x)/b)/a/b/ln(f)^2-3/4*x*polylog(2,-a*f^(2*x)/b)/a/b/ln(f)^3+3
/8*polylog(3,-a*f^(2*x)/b)/a/b/ln(f)^4
```

Maxima [A] time = 0.79295, size = 149, normalized size = 1.16

$$-\frac{x^3}{2\,(a^2f^{2\,x}\log(f)+ab\log(f))}+\frac{\log(f^x)^3}{2\,ab\log(f)^4}-\frac{3\left(2\,\log(f^x)^2\log\left(\frac{af^{2\,x}}{b}+1\right)+2\,\mathrm{Li}_2\left(-\frac{af^{2\,x}}{b}\right)\log(f^x)-\mathrm{Li}_3(-\frac{af^{2\,x}}{b})\right)}{8\,ab\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(a*f^x + b/f^x)^2,x, algorithm="maxima")
```

```
[Out] -1/2*x^3/(a^2*f^(2*x)*log(f) + a*b*log(f)) + 1/2*log(f^x)^3/(a*b*
log(f)^4) - 3/8*(2*log(f^x)^2*log(a*f^(2*x)/b + 1) + 2*dilog(-a*f
^(2*x)/b)*log(f^x) - polylog(3, -a*f^(2*x)/b))/(a*b*log(f)^4)
```

Fricas [A] time = 0.256131, size = 425, normalized size = 3.32

$$2\,af^{2\,x}x^3\log(f)^3-6\left(af^{2\,x}x\log(f)+bx\log(f)\right)\mathrm{Li}_2\left(-\frac{af^x+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)-6\left(af^{2\,x}x\log(f)+bx\log(f)\right)\mathrm{Li}_2\left(\frac{af^x-b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(a*f^x + b/f^x)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*a*f^(2*x)*x^3*log(f)^3 - 6*(a*f^(2*x)*x*log(f) + b*x*log(f
))*dilog(-(a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b)) + 1) - 6*(a*f^(2*
x)*x*log(f) + b*x*log(f))*dilog((a*f^x - b*sqrt(-a/b))/(b*sqrt(-a
/b)) + 1) - 3*(a*f^(2*x)*x^2*log(f)^2 + b*x^2*log(f)^2)*log((a*f^
x + b*sqrt(-a/b))/(b*sqrt(-a/b))) - 3*(a*f^(2*x)*x^2*log(f)^2 + b
*x^2*log(f)^2)*log(-(a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b))) + 6*(a
*f^(2*x) + b)*polylog(3, a*f^x/(b*sqrt(-a/b))) + 6*(a*f^(2*x) + b
)*polylog(3, -a*f^x/(b*sqrt(-a/b))))/(a^2*b*f^(2*x)*log(f)^4 + a*
b^2*log(f)^4)
```

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

$$\frac{x^3}{2ab\log(f) + 2b^2f^{-2x}\log(f)} - \frac{3\int \frac{f^{2x}x^2}{af^{2x}+b}\,dx}{2b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b/(f**x)+a*f**x)**2,x)
```

```
[Out] x**3/(2*a*b*log(f) + 2*b**2*f**(-2*x)*log(f)) - 3*Integral(f**(2*
x)*x**2/(a*f**(2*x) + b), x)/(2*b*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3}{\left(af^x + \frac{b}{f^x}\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(a*f^x + b/f^x)^2,x, algorithm="giac")
```

```
[Out] integrate(x^3/(a*f^x + b/f^x)^2, x)
```

3.62 $\int \frac{1}{(bf^{-x}+af^x)^3}\,dx$

Optimal. Leaf size=87

$$\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log(f)}+\frac{f^x}{8ab\log(f)\left(af^{2x}+b\right)}-\frac{f^x}{4a\log(f)\left(af^{2x}+b\right)^2}$$

```
[Out] -f^x/(4*a*(b + a*f^(2*x))^2*Log[f]) + f^x/(8*a*b*(b + a*f^(2*x))*
Log[f]) + ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(8*a^(3/2)*b^(3/2)*Log[f]
)
```

Rubi [A] time = 0.0964278, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log(f)}+\frac{f^x}{8ab\log(f)\left(af^{2x}+b\right)}-\frac{f^x}{4a\log(f)\left(af^{2x}+b\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(b/f^x + a*f^x)^(-3),x]
```

```
[Out] -f^x/(4*a*(b + a*f^(2*x))^2*Log[f]) + f^x/(8*a*b*(b + a*f^(2*x))*
Log[f]) + ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(8*a^(3/2)*b^(3/2)*Log[f]
)
```

Rubi in Sympy [A] time = 17.1624, size = 73, normalized size = 0.84

$$\frac{f^{-x}}{4b\left(a+bf^{-2x}\right)^2\log(f)}-\frac{f^{-x}}{8ab\left(a+bf^{-2x}\right)\log(f)}-\frac{\operatorname{atan}\left(\frac{\sqrt{b}f^{-x}}{\sqrt{a}}\right)}{8a^{\frac{3}{2}}b^{\frac{3}{2}}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b/(f**x)+a*f**x)**3,x)
```

```
[Out] f**(-x)/(4*b*(a + b*f**(-2*x))**2*log(f)) - f**(-x)/(8*a*b*(a + b
*f**(-2*x))*log(f)) - atan(sqrt(b)*f**(-x)/sqrt(a))/(8*a**(3/2)*b
**(3/2)*log(f))
```

Mathematica [A] time = 0.0843293, size = 70, normalized size = 0.8

$$\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)+\frac{\sqrt{a}\sqrt{b}f^x\left(af^{2x}-b\right)}{\left(af^{2x}+b\right)^2}}{8a^{3/2}b^{3/2}\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b/f^x + a*f^x)^(-3),x]
```

```
[Out] ((Sqrt[a]*Sqrt[b]*f^x*(-b + a*f^(2*x)))/(b + a*f^(2*x))^2 + ArcTa
n[(Sqrt[a]*f^x)/Sqrt[b]])/(8*a^(3/2)*b^(3/2)*Log[f])
```

Maple [A] time = 0.014, size = 78, normalized size = 0.9

$$\frac{(f^x)^3}{8\ln(f)\left(a(f^x)^2+b\right)^2 b}-\frac{f^x}{8\ln(f)\left(a(f^x)^2+b\right)^2 a}+\frac{1}{8b\ln(f)a}\arctan\left(af^x\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b/(f^x)+a*f^x)^3,x)
```

```
[Out] 1/8/ln(f)/(a*(f^x)^2+b)^2/b*(f^x)^3-1/8/ln(f)/(a*(f^x)^2+b)^2/a*f
^x+1/8/ln(f)/b/a/(a*b)^(1/2)*arctan(a*f^x/(a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*f^x + b/f^x)^(-3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.261426, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{-ab}af^{3x}-2\sqrt{-ab}bf^x+\left(a^2f^{4x}+2abf^{2x}+b^2\right)\log\left(\frac{2abf^x+\sqrt{-ab}af^{2x}-\sqrt{-ab}b}{af^{2x}+b}\right)}{16\left(\sqrt{-ab}a^3bf^{4x}\log(f)+2\sqrt{-ab}a^2b^2f^{2x}\log(f)+\sqrt{-ab}ab^3\log(f)\right)},\frac{\sqrt{ab}af^{3x}-\sqrt{ab}bf^x-\left(a^2f^{4x}+2a\right.}{8\left(\sqrt{ab}a^3bf^{4x}\log(f)+2\sqrt{ab}a^2b^2f\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*f^x + b/f^x)^(-3),x, algorithm="fricas")
```

```
[Out] [1/16*(2*sqrt(-a*b)*a*f^(3*x) - 2*sqrt(-a*b)*b*f^x + (a^2*f^(4*x)
 + 2*a*b*f^(2*x) + b^2)*log((2*a*b*f^x + sqrt(-a*b)*a*f^(2*x) - s
qrt(-a*b)*b)/(a*f^(2*x) + b)))/(sqrt(-a*b)*a^3*b*f^(4*x)*log(f) +
 2*sqrt(-a*b)*a^2*b^2*f^(2*x)*log(f) + sqrt(-a*b)*a*b^3*log(f)),
1/8*(sqrt(a*b)*a*f^(3*x) - sqrt(a*b)*b*f^x - (a^2*f^(4*x) + 2*a*b
*f^(2*x) + b^2)*arctan(b/(sqrt(a*b)*f^x)))/(sqrt(a*b)*a^3*b*f^(4*
x)*log(f) + 2*sqrt(a*b)*a^2*b^2*f^(2*x)*log(f) + sqrt(a*b)*a*b^3*
log(f))]
```

Sympy [A] time = 0.65284, size = 87, normalized size = 1.

$$\frac{af^{-x}-bf^{-3x}}{8a^3b\log(f)+16a^2b^2f^{-2x}\log(f)+8ab^3f^{-4x}\log(f)}+\frac{\operatorname{RootSum}\left(256z^2a^3b^3+1,\left(i\mapsto i\log\left(-16ia^2b+f^{-x}\right)\right)\right)}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b/(f**x)+a*f**x)**3,x)
```

```
[Out] (a*f**(-x) - b*f**(-3*x))/(8*a**3*b*log(f) + 16*a**2*b**2*f**(-2*
x)*log(f) + 8*a*b**3*f**(-4*x)*log(f)) + RootSum(256*_z**2*a**3*b
```

```
**3 + 1, Lambda(_i, _i*log(-16*_i*a**2*b + f**(-x))))/log(f)
```

GIAC/XCAS [A] time = 0.256763, size = 89, normalized size = 1.02

$$\frac{\arctan\left(\frac{af^{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}ab\ln\left(f\right)}+\frac{af^{3x}-bf^{x}}{8\left(af^{2x}+b\right)^{2}ab\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*f^x + b/f^x)^(-3),x, algorithm="giac")
```

```
[Out] 1/8*arctan(a*f^x/sqrt(a*b))/(sqrt(a*b)*a*b*ln(f)) + 1/8*(a*f^(3*x
) - b*f^x)/((a*f^(2*x) + b)^2*a*b*ln(f))
```

3.63 $\int \frac{x}{(bf^{-x}+af^x)^3}\, dx$

Optimal. Leaf size=196

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{16a^{3/2}b^{3/2}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{16a^{3/2}b^{3/2}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log(f)}+\frac{f^x}{8ab\log^2(f)\left(af^{2x}+b\right)}+\frac{xf^x}{8ab\log(f)\left(af^{2x}+b\right)}-\frac{xf^x}{4a\log(f)\left(af^{2x}+b\right)^2}$$

```
[Out] f^x/(8*a*b*(b + a*f^(2*x))*Log[f]^2) - (f^x*x)/(4*a*(b + a*f^(2*x
))^2*Log[f]) + (f^x*x)/(8*a*b*(b + a*f^(2*x))*Log[f]) + (x*ArcTan
[(Sqrt[a]*f^x)/Sqrt[b]])/(8*a^(3/2)*b^(3/2)*Log[f]) - ((I/16)*Pol
yLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b^(3/2)*Log[f]^2) +
 ((I/16)*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b^(3/2)*Lo
g[f]^2)
```

Rubi [A] time = 0.835626, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 22, number of rules used = 9, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.529

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{16a^{3/2}b^{3/2}\log^2(f)}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{16a^{3/2}b^{3/2}\log^2(f)}+\frac{x\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log(f)}+\frac{f^x}{8ab\log^2(f)\left(af^{2x}+b\right)}+\frac{xf^x}{8ab\log(f)\left(af^{2x}+b\right)}-\frac{xf^x}{4a\log(f)\left(af^{2x}+b\right)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(b/f^x + a*f^x)^3,x]
```

```
[Out] f^x/(8*a*b*(b + a*f^(2*x))*Log[f]^2) - (f^x*x)/(4*a*(b + a*f^(2*x
))^2*Log[f]) + (f^x*x)/(8*a*b*(b + a*f^(2*x))*Log[f]) + (x*ArcTan
[(Sqrt[a]*f^x)/Sqrt[b]])/(8*a^(3/2)*b^(3/2)*Log[f]) - ((I/16)*Pol
yLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b^(3/2)*Log[f]^2) +
 ((I/16)*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b^(3/2)*Lo
g[f]^2)
```

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

$$\int \frac{f^{-3x}x}{\left(a+bf^{-2x}\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b/(f**x)+a*f**x)**3,x)
```

```
[Out] Integral(f**(-3*x)*x/(a + b*f**(-2*x))**3, x)
```

Mathematica [A] time = 0.294583, size = 209, normalized size = 1.07

$$\frac{-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{b^{3/2}}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{b^{3/2}}+\frac{ix\log(f)\log\left(1-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{b^{3/2}}-\frac{ix\log(f)\log\left(1+\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{b^{3/2}}+\frac{2\sqrt{a}f^x}{abf^{2x}+b^2}+\frac{2\sqrt{a}xf^x\log(f)}{abf^{2x}+b^2}-\frac{4\sqrt{a}xf^x\text{lo}}{(af^{2x}+b}}{16a^{3/2}\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(b/f^x + a*f^x)^3,x]
```

```
[Out] ((2*Sqrt[a]*f^x)/(b^2 + a*b*f^(2*x)) - (4*Sqrt[a]*f^x*x*Log[f])/(
b + a*f^(2*x))^2 + (2*Sqrt[a]*f^x*x*Log[f])/(b^2 + a*b*f^(2*x)) +
 (I*x*Log[f]*Log[1 - (I*Sqrt[a]*f^x)/Sqrt[b]])/b^(3/2) - (I*x*Log
[f]*Log[1 + (I*Sqrt[a]*f^x)/Sqrt[b]])/b^(3/2) - (I*PolyLog[2, ((-
I)*Sqrt[a]*f^x)/Sqrt[b]])/b^(3/2) + (I*PolyLog[2, (I*Sqrt[a]*f^x)
/Sqrt[b]])/b^(3/2))/(16*a^(3/2)*Log[f]^2)
```

Maple [C] time = 0.053, size = 209, normalized size = 1.1

$$\frac{\left((f^x)^2\ln(f)\,ax-\ln(f)\,bx+a\,(f^x)^2+b\right)f^x}{8\,(\ln(f))^2\,ab\left(a\,(f^x)^2+b\right)^2}+\frac{x}{16\,b\ln(f)\,a}\ln\left(1\left(-af^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}-\frac{x}{16\,b\ln(f)\,a}\ln\left(1\left(af^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}+\frac{1}{16\,(\ln(f))^2\,ab}\mathit{dilog}\left(1\left(-af^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}-\frac{1}{16\,(\ln(f))^2\,ab}\mathit{dilog}\left(1\left(af^x+\sqrt{-ab}\right)\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b/(f^x)+a*f^x)^3,x)
```

```
[Out] 1/8*f^x*((f^x)^2*ln(f)*a*x-ln(f)*b*x+a*(f^x)^2+b)/ln(f)^2/b/a/(a*
(f^x)^2+b)^2+1/16/ln(f)/a/b*x/(-a*b)^(1/2)*ln((-a*f^x+(-a*b)^(1/2
))/(-a*b)^(1/2))-1/16/ln(f)/a/b*x/(-a*b)^(1/2)*ln((a*f^x+(-a*b)^(
1/2))/(-a*b)^(1/2))+1/16/ln(f)^2/a/b/(-a*b)^(1/2)*dilog((-a*f^x+(
-a*b)^(1/2))/(-a*b)^(1/2))-1/16/ln(f)^2/a/b/(-a*b)^(1/2)*dilog((a
*f^x+(-a*b)^(1/2))/(-a*b)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.348205, size = 564, normalized size = 2.88

$$2\left(a^2x\log(f)+a^2\right)f^{3x}-2\left(abx\log(f)-ab\right)f^x+\left(a^2f^{4x}\sqrt{-\frac{a}{b}}+2\,abf^{2x}\sqrt{-\frac{a}{b}}+b^2\sqrt{-\frac{a}{b}}\right)\mathrm{Li}_2\left(-\frac{af^x+b\sqrt{-\frac{a}{b}}}{b\sqrt{-\frac{a}{b}}}+1\right)-\left(a^2f^{4x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x)^3,x, algorithm="fricas")
```

```
[Out] 1/16*(2*(a^2*x*log(f) + a^2)*f^(3*x) - 2*(a*b*x*log(f) - a*b)*f^x
 + (a^2*f^(4*x)*sqrt(-a/b) + 2*a*b*f^(2*x)*sqrt(-a/b) + b^2*sqrt(
-a/b))*dilog(-(a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b)) + 1) - (a^2*f
```

```
^(4*x)*sqrt(-a/b) + 2*a*b*f^(2*x)*sqrt(-a/b) + b^2*sqrt(-a/b))*di
log((a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b)) + 1) + (a^2*f^(4*x)*x*s
qrt(-a/b)*log(f) + 2*a*b*f^(2*x)*x*sqrt(-a/b)*log(f) + b^2*x*sqrt
(-a/b)*log(f))*log((a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b))) - (a^2*
f^(4*x)*x*sqrt(-a/b)*log(f) + 2*a*b*f^(2*x)*x*sqrt(-a/b)*log(f) +
 b^2*x*sqrt(-a/b)*log(f))*log(-(a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/
b))))/(a^4*b*f^(4*x)*log(f)^2 + 2*a^3*b^2*f^(2*x)*log(f)^2 + a^2*
b^3*log(f)^2)
```

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

$$\frac{f^{-x}\left(ax\log\left(f\right)+a\right)+f^{-3x}\left(-bx\log\left(f\right)+b\right)}{8a^{3}b\log\left(f\right)^{2}+16a^{2}b^{2}f^{-2x}\log\left(f\right)^{2}+8ab^{3}f^{-4x}\log\left(f\right)^{2}}+\frac{\int\frac{f^{x}x}{af^{2x}+b}\,dx}{8ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b/(f**x)+a*f**x)**3,x)
```

```
[Out] (f**(-x)*(a*x*log(f) + a) + f**(-3*x)*(-b*x*log(f) + b))/(8*a**3*
b*log(f)**2 + 16*a**2*b**2*f**(-2*x)*log(f)**2 + 8*a*b**3*f**(-4*
x)*log(f)**2) + Integral(f**x*x/(a*f**(2*x) + b), x)/(8*a*b)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x}{\left(af^{x}+\frac{b}{f^{x}}\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a*f^x + b/f^x)^3,x, algorithm="giac")
```

```
[Out] integrate(x/(a*f^x + b/f^x)^3, x)
```

3.64 $\int \frac{x^2}{(bf^{-x}+af^x)^3}\,dx$

Optimal. Leaf size=316

$$\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log(f)}-\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{4a^{3/2}b^{3/2}\log^3(f)}+\frac{x^2f^x}{8ab\log(f)(af^{2x}+b)}-\frac{x^2f^x}{4a\log(f)(af^{2x}+b)^2}+\frac{xf^x}{4ab\log^2(f)(af^{2x}+b)}$$

```
[Out] -ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(4*a^(3/2)*b^(3/2)*Log[f]^3) + (f^
x*x)/(4*a*b*(b + a*f^(2*x))*Log[f]^2) - (f^x*x^2)/(4*a*(b + a*f^(
2*x))^2*Log[f]) + (f^x*x^2)/(8*a*b*(b + a*f^(2*x))*Log[f]) + (x^2
*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(8*a^(3/2)*b^(3/2)*Log[f]) - ((I/
8)*x*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b^(3/2)*Log
[f]^2) + ((I/8)*x*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b
^(3/2)*Log[f]^2) + ((I/8)*PolyLog[3, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])
/(a^(3/2)*b^(3/2)*Log[f]^3) - ((I/8)*PolyLog[3, (I*Sqrt[a]*f^x)/S
qrt[b]])/(a^(3/2)*b^(3/2)*Log[f]^3)
```

Rubi [A] time = 1.91856, antiderivative size = 316, normalized size of antiderivative = 1., number of steps used = 43, number of rules used = 14, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.737$

$$\frac{i\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^3(f)}-\frac{i\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^3(f)}-\frac{ix\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^2(f)}+\frac{ix\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log^2(f)}+\frac{x^2\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{8a^{3/2}b^{3/2}\log(f)}-\frac{\tan^{-1}\left(\frac{\sqrt{a}f^x}{\sqrt{b}}\right)}{4a^{3/2}b^{3/2}\log^3(f)}+\frac{x^2f^x}{8ab\log(f)(af^{2x}+b)}-\frac{x^2f^x}{4a\log(f)(af^{2x}+b)^2}+\frac{xf^x}{4ab\log^2(f)(af^{2x}+b)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(b/f^x + a*f^x)^3,x]
```


```
[Out] -ArcTan[(Sqrt[a]*f^x)/Sqrt[b]]/(4*a^(3/2)*b^(3/2)*Log[f]^3) + (f^
x*x)/(4*a*b*(b + a*f^(2*x))*Log[f]^2) - (f^x*x^2)/(4*a*(b + a*f^(
2*x))^2*Log[f]) + (f^x*x^2)/(8*a*b*(b + a*f^(2*x))*Log[f]) + (x^2
*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/(8*a^(3/2)*b^(3/2)*Log[f]) - ((I/
8)*x*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b^(3/2)*Log
[f]^2) + ((I/8)*x*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]])/(a^(3/2)*b
^(3/2)*Log[f]^2) + ((I/8)*PolyLog[3, ((-I)*Sqrt[a]*f^x)/Sqrt[b]])
/(a^(3/2)*b^(3/2)*Log[f]^3) - ((I/8)*PolyLog[3, (I*Sqrt[a]*f^x)/S
qrt[b]])/(a^(3/2)*b^(3/2)*Log[f]^3)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b/(f**x)+a*f**x)**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.747463, size = 254, normalized size = 0.8

$$\frac{\frac{3i\left(2\text{PolyLog}\left(3,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-2\text{PolyLog}\left(3,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-2x\log(f)\text{PolyLog}\left(2,-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+2x\log(f)\text{PolyLog}\left(2,\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)+x^2\log^2(f)\log\left(1-\frac{i\sqrt{a}f^x}{\sqrt{b}}\right)-x^2\log^2(f)\right.}{b^{3/2}}}{48a^{3/2}\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(b/f^x + a*f^x)^3,x]
```

```
[Out] ((-12*ArcTan[(Sqrt[a]*f^x)/Sqrt[b]])/b^(3/2) - (12*Sqrt[a]*f^x*x^
2*Log[f]^2)/(b + a*f^(2*x))^2 + (6*Sqrt[a]*f^x*x*Log[f]*(2 + x*Lo
g[f]))/(b*(b + a*f^(2*x))) + ((3*I)*(x^2*Log[f]^2*Log[1 - (I*Sqrt
[a]*f^x)/Sqrt[b]] - x^2*Log[f]^2*Log[1 + (I*Sqrt[a]*f^x)/Sqrt[b]]
 - 2*x*Log[f]*PolyLog[2, ((-I)*Sqrt[a]*f^x)/Sqrt[b]] + 2*x*Log[f]
*PolyLog[2, (I*Sqrt[a]*f^x)/Sqrt[b]] + 2*PolyLog[3, ((-I)*Sqrt[a]
*f^x)/Sqrt[b]] - 2*PolyLog[3, (I*Sqrt[a]*f^x)/Sqrt[b]]))/b^(3/2))
/(48*a^(3/2)*Log[f]^3)
```

Maple [F] time = 0.116, size = 0, normalized size = 0.

$$\int x^2\left(\frac{b}{f^x}+af^x\right)^{-3}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b/(f^x)+a*f^x)^3,x)
```

```
[Out] int(x^2/(b/(f^x)+a*f^x)^3,x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.316012, size = 1010, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x)^3,x, algorithm="fricas")
```

```
[Out] 1/16*(2*(a^2*x^2*log(f)^2 + 2*a^2*x*log(f))*f^(3*x) - 2*(a*b*x^2*
log(f)^2 - 2*a*b*x*log(f))*f^x + 2*(a^2*f^(4*x)*x*sqrt(-a/b)*log(
f) + 2*a*b*f^(2*x)*x*sqrt(-a/b)*log(f) + b^2*x*sqrt(-a/b)*log(f))
*dilog(-(a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b)) + 1) - 2*(a^2*f^(4*
x)*x*sqrt(-a/b)*log(f) + 2*a*b*f^(2*x)*x*sqrt(-a/b)*log(f) + b^2*
```

```
x*sqrt(-a/b)*log(f))*dilog((a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b))
+ 1) - 2*(a^2*f^(4*x)*sqrt(-a/b) + 2*a*b*f^(2*x)*sqrt(-a/b) + b^2
*sqrt(-a/b))*log(2*a*f^x + 2*b*sqrt(-a/b)) + 2*(a^2*f^(4*x)*sqrt(
-a/b) + 2*a*b*f^(2*x)*sqrt(-a/b) + b^2*sqrt(-a/b))*log(2*a*f^x -
2*b*sqrt(-a/b)) + (a^2*f^(4*x)*x^2*sqrt(-a/b)*log(f)^2 + 2*a*b*f^
(2*x)*x^2*sqrt(-a/b)*log(f)^2 + b^2*x^2*sqrt(-a/b)*log(f)^2)*log(
(a*f^x + b*sqrt(-a/b))/(b*sqrt(-a/b))) - (a^2*f^(4*x)*x^2*sqrt(-a
/b)*log(f)^2 + 2*a*b*f^(2*x)*x^2*sqrt(-a/b)*log(f)^2 + b^2*x^2*sq
rt(-a/b)*log(f)^2)*log(-(a*f^x - b*sqrt(-a/b))/(b*sqrt(-a/b))) +
2*(a^2*f^(4*x)*sqrt(-a/b) + 2*a*b*f^(2*x)*sqrt(-a/b) + b^2*sqrt(-
a/b))*polylog(3, a*f^x/(b*sqrt(-a/b))) - 2*(a^2*f^(4*x)*sqrt(-a/b
) + 2*a*b*f^(2*x)*sqrt(-a/b) + b^2*sqrt(-a/b))*polylog(3, -a*f^x/
(b*sqrt(-a/b))))/(a^4*b*f^(4*x)*log(f)^3 + 2*a^3*b^2*f^(2*x)*log(
f)^3 + a^2*b^3*log(f)^3)
```

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

$$\frac{f^{-x}\left(ax^2\log(f)+2ax\right)+f^{-3x}\left(-bx^2\log(f)+2bx\right)}{8a^3b\log(f)^2+16a^2b^2f^{-2x}\log(f)^2+8ab^3f^{-4x}\log(f)^2}+\frac{\int\left(-\frac{2f^x}{af^{2x}+b}\right)dx+\int\frac{f^xx^2\log(f)^2}{af^{2x}+b}\,dx}{8ab\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b/(f**x)+a*f**x)**3,x)
```

```
[Out] (f**(-x)*(a*x**2*log(f) + 2*a*x) + f**(-3*x)*(-b*x**2*log(f) + 2*
b*x))/(8*a**3*b*log(f)**2 + 16*a**2*b**2*f**(-2*x)*log(f)**2 + 8*
a*b**3*f**(-4*x)*log(f)**2) + (Integral(-2*f**x/(a*f**(2*x) + b),
 x) + Integral(f**x*x**2*log(f)**2/(a*f**(2*x) + b), x))/(8*a*b*l
og(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^2}{\left(af^x+\frac{b}{f^x}\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(a*f^x + b/f^x)^3,x, algorithm="giac")
```

```
[Out] integrate(x^2/(a*f^x + b/f^x)^3, x)
```

3.65 $\int f^{a+bx+cx^2} g^{d+ex+fx^2}\,dx$

Optimal. Leaf size=95

$$\frac{\sqrt{\pi} f^a g^d \exp\left(-\frac{(b\log(f)+e\log(g))^2}{4(c\log(f)+f\log(g))}\right)\text{Erfi}\left(\frac{b\log(f)+2x(c\log(f)+f\log(g))+e\log(g)}{2\sqrt{c\log(f)+f\log(g)}}\right)}{2\sqrt{c\log(f)+f\log(g)}}$$

```
[Out] (f^a*g^d*Sqrt[Pi]*Erfi[(b*Log[f] + e*Log[g] + 2*x*(c*Log[f] + f*L
og[g]))/(2*Sqrt[c*Log[f] + f*Log[g]])])/(2*E^((b*Log[f] + e*Log[g
])^2/(4*(c*Log[f] + f*Log[g])))*Sqrt[c*Log[f] + f*Log[g]])
```

Rubi [A] time = 0.297247, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{\sqrt{\pi} f^a g^d \exp\left(-\frac{(b\log(f)+e\log(g))^2}{4(c\log(f)+f\log(g))}\right)\text{Erfi}\left(\frac{b\log(f)+2x(c\log(f)+f\log(g))+e\log(g)}{2\sqrt{c\log(f)+f\log(g)}}\right)}{2\sqrt{c\log(f)+f\log(g)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*g^(d + e*x + f*x^2),x]
```

```
[Out] (f^a*g^d*Sqrt[Pi]*Erfi[(b*Log[f] + e*Log[g] + 2*x*(c*Log[f] + f*L
og[g]))/(2*Sqrt[c*Log[f] + f*Log[g]])])/(2*E^((b*Log[f] + e*Log[g
])^2/(4*(c*Log[f] + f*Log[g])))*Sqrt[c*Log[f] + f*Log[g]])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*g**(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.0791296, size = 93, normalized size = 0.98

$$\frac{\sqrt{\pi} f^a g^d \exp\left(-\frac{(b\log(f)+e\log(g))^2}{4(c\log(f)+f\log(g))}\right)\text{Erfi}\left(\frac{\log(f)(b+2cx)+\log(g)(e+2fx)}{2\sqrt{c\log(f)+f\log(g)}}\right)}{2\sqrt{c\log(f)+f\log(g)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*g^(d + e*x + f*x^2),x]
```

```
[Out] (f^a*g^d*Sqrt[Pi]*Erfi[((b + 2*c*x)*Log[f] + (e + 2*f*x)*Log[g])/
(2*Sqrt[c*Log[f] + f*Log[g]])])/(2*E^((b*Log[f] + e*Log[g])^2/(4*
(c*Log[f] + f*Log[g])))*Sqrt[c*Log[f] + f*Log[g]])
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int f^{cx^2+bx+a} g^{f x^2+ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*g^(f*x^2+e*x+d),x)
```

```
[Out] int(f^(c*x^2+b*x+a)*g^(f*x^2+e*x+d),x)
```

Maxima [A] time = 0.784104, size = 122, normalized size = 1.28

$$\frac{\sqrt{\pi} f^a g^d \operatorname{erf}\left(\sqrt{-c\log(f) - f\log(g)}x - \frac{b\log(f)+e\log(g)}{2\sqrt{-c\log(f)-f\log(g)}}\right) e^{\left(-\frac{(b\log(f)+e\log(g))^2}{4(c\log(f)+f\log(g))}\right)}}{2\sqrt{-c\log(f) - f\log(g)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*f^a*g^d*erf(sqrt(-c*log(f) - f*log(g))*x - 1/2*(b*lo
g(f) + e*log(g))/sqrt(-c*log(f) - f*log(g)))*e^(-1/4*(b*log(f) +
e*log(g))^2/(c*log(f) + f*log(g)))/sqrt(-c*log(f) - f*log(g))
```

Fricas [A] time = 0.270226, size = 167, normalized size = 1.76

$$\frac{\sqrt{\pi}\operatorname{erf}\left(\frac{((2cx+b)\log(f)+(2fx+e)\log(g))\sqrt{-c\log(f)-f\log(g)}}{2(c\log(f)+f\log(g))}\right) e^{\left(-\frac{\left(b^2-4ac\right)\log(f)^2-2(2cd-be+2af)\log(f)\log(g)+\left(e^2-4df\right)\log(g)^2}{4(c\log(f)+f\log(g))}\right)}}{2\sqrt{-c\log(f) - f\log(g)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*erf(1/2*((2*c*x + b)*log(f) + (2*f*x + e)*log(g))*sq
rt(-c*log(f) - f*log(g))/(c*log(f) + f*log(g)))*e^(-1/4*((b^2 - 4
*a*c)*log(f)^2 - 2*(2*c*d - b*e + 2*a*f)*log(f)*log(g) + (e^2 - 4
*d*f)*log(g)^2)/(c*log(f) + f*log(g)))/sqrt(-c*log(f) - f*log(g))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*g**(f*x**2+e*x+d),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.288567, size = 177, normalized size = 1.86

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\frac{1}{2}\,\sqrt{-c\ln\left(f\right)-f\ln\left(g\right)}\left(2\,x+\frac{b\ln(f)+e\ln(g)}{c\ln(f)+f\ln(g)}\right)\right)\,e^{\left(-\frac{b^2\ln(f)^2-4\,ac\ln(f)^2-4\,cd\ln(f)\ln(g)-4\,af\ln(f)\ln(g)+2\,be\ln(f)\ln(g)-4\,df\ln(g)^2+e^2\ln(g)^2}{4\,(c\ln(f)+f\ln(g))}\right)}}{2\,\sqrt{-c\ln\left(f\right)-f\ln\left(g\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*sqrt(pi)*erf(-1/2*sqrt(-c*ln(f) - f*ln(g))*(2*x + (b*ln(f) +
 e*ln(g))/(c*ln(f) + f*ln(g))))*e^(-1/4*(b^2*ln(f)^2 - 4*a*c*ln(f
)^2 - 4*c*d*ln(f)*ln(g) - 4*a*f*ln(f)*ln(g) + 2*b*e*ln(f)*ln(g) -
 4*d*f*ln(g)^2 + e^2*ln(g)^2)/(c*ln(f) + f*ln(g)))/sqrt(-c*ln(f)
- f*ln(g))
```

3.66 $\int F^{e(c+dx)} \left(a+bG^{h(f+gx)}\right)^n \, dx$

Optimal. Leaf size=106

$$\frac{F^{e(c+dx)}\left(a+bG^{h(f+gx)}\right)^n\left(\frac{bG^{h(f+gx)}}{a}+1\right)^{-n}\text{Hypergeometric2F1}\left(-n,\frac{de\log(F)}{gh\log(G)},\frac{de\log(F)}{gh\log(G)}+1,-\frac{bG^{h(f+gx)}}{a}\right)}{de\log(F)}$$

```
[Out] (F^(e*(c + d*x))*(a + b*G^(h*(f + g*x)))^n*Hypergeometric2F1[-n,
(d*e*Log[F])/(g*h*Log[G]), 1 + (d*e*Log[F])/(g*h*Log[G]), -((b*G^
(h*(f + g*x)))/a)])/(d*e*(1 + (b*G^(h*(f + g*x)))/a)^n*Log[F])
```

Rubi [A] time = 0.178081, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{F^{e(c+dx)}\left(a+bG^{h(f+gx)}\right)^n\left(\frac{bG^{h(f+gx)}}{a}+1\right)^{-n}\text{Hypergeometric2F1}\left(-n,\frac{de\log(F)}{gh\log(G)},\frac{de\log(F)}{gh\log(G)}+1,-\frac{bG^{h(f+gx)}}{a}\right)}{de\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(e*(c + d*x))*(a + b*G^(h*(f + g*x)))^n,x]
```

```
[Out] (F^(e*(c + d*x))*(a + b*G^(h*(f + g*x)))^n*Hypergeometric2F1[-n,
(d*e*Log[F])/(g*h*Log[G]), 1 + (d*e*Log[F])/(g*h*Log[G]), -((b*G^
(h*(f + g*x)))/a)])/(d*e*(1 + (b*G^(h*(f + g*x)))/a)^n*Log[F])
```

Rubi in Sympy [A] time = 8.96705, size = 75, normalized size = 0.71

$$\frac{F^{e(c+dx)}\left(G^{h(f+gx)}b+a\right)^{n+1}{}_2F_1\left(\begin{matrix}1,\frac{de\log(F)}{gh\log(G)}+n+1\\\frac{de\log(F)}{gh\log(G)}+1\end{matrix}\middle|-\frac{G^{h(f+gx)}b}{a}\right)}{ade\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(e*(d*x+c))*(a+b*G**(h*(g*x+f)))**n,x)
```

```
[Out] F**(e*(c + d*x))*(G**(h*(f + g*x))*b + a)**(n + 1)*hyper((1, d*e*
log(F)/(g*h*log(G)) + n + 1), (d*e*log(F)/(g*h*log(G)) + 1,), -G*
*(h*(f + g*x))*b/a)/(a*d*e*log(F))
```

Mathematica [A] time = 0.163872, size = 106, normalized size = 1.

$$\frac{F^{e(c+dx)}\left(a+bG^{h(f+gx)}\right)^n\left(\frac{bG^{h(f+gx)}}{a}+1\right)^{-n}\text{Hypergeometric2F1}\left(-n,\frac{de\log(F)}{gh\log(G)},\frac{de\log(F)}{gh\log(G)}+1,-\frac{bG^{h(f+gx)}}{a}\right)}{de\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(e*(c + d*x))*(a + b*G^(h*(f + g*x)))^n,x]
```

```
[Out] (F^(e*(c + d*x))*(a + b*G^(h*(f + g*x)))^n*Hypergeometric2F1[-n,
(d*e*Log[F])/(g*h*Log[G]), 1 + (d*e*Log[F])/(g*h*Log[G]), -((b*G^
(h*(f + g*x)))/a)])/(d*e*(1 + (b*G^(h*(f + g*x)))/a)^n*Log[F])
```

Maple [F] time = 0.127, size = 0, normalized size = 0.

$$\int F^{e(dx+c)} \left(a + bG^{h(gx+f)}\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e*(d*x+c))*(a+b*G^(h*(g*x+f)))^n,x)
```

```
[Out] int(F^(e*(d*x+c))*(a+b*G^(h*(g*x+f)))^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(G^{(gx+f)h} b + a\right)^n F^{(dx+c)e} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((G^((g*x + f)*h)*b + a)^n*F^((d*x + c)*e),x, algorithm="maxima")
```

```
[Out] integrate((G^((g*x + f)*h)*b + a)^n*F^((d*x + c)*e), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(G^{ghx+fh} b + a\right)^n F^{dex+ce}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((G^((g*x + f)*h)*b + a)^n*F^((d*x + c)*e),x, algorithm="fricas")
```

```
[Out] integral((G^(g*h*x + f*h)*b + a)^n*F^(d*e*x + c*e), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e*(d*x+c))*(a+b*G**(h*(g*x+f)))**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(G^{(gx+f)h} b + a\right)^n F^{(dx+c)e} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((G^((g*x + f)*h)*b + a)^n*F^((d*x + c)*e),x, algorithm="giac")
```

```
[Out] integrate((G^((g*x + f)*h)*b + a)^n*F^((d*x + c)*e), x)
```

3.67 $\int \frac{F^{e(c+dx)}H^{t(r+sx)}}{a+bF^{e(c+dx)}}\,dx$

Optimal. Leaf size=75

$$\frac{H^{t(r+sx)}\text{Hypergeometric2F1}\left(1,-\frac{st\log(H)}{de\log(F)},1-\frac{st\log(H)}{de\log(F)},-\frac{aF^{-e(c+dx)}}{b}\right)}{bst\log(H)}$$

```
[Out] (H^(t*(r + s*x))*Hypergeometric2F1[1, -((s*t*Log[H])/(d*e*Log[F])
), 1 - (s*t*Log[H])/(d*e*Log[F]), -(a/(b*F^(e*(c + d*x))))])/(b*s
*t*Log[H])
```

Rubi [A] time = 0.213812, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{H^{t(r+sx)}\text{Hypergeometric2F1}\left(1,-\frac{st\log(H)}{de\log(F)},1-\frac{st\log(H)}{de\log(F)},-\frac{aF^{-e(c+dx)}}{b}\right)}{bst\log(H)}$$

Antiderivative was successfully verified.

```
[In] Int[(F^(e*(c + d*x))*H^(t*(r + s*x)))/(a + b*F^(e*(c + d*x))),x]
```

```
[Out] (H^(t*(r + s*x))*Hypergeometric2F1[1, -((s*t*Log[H])/(d*e*Log[F])
), 1 - (s*t*Log[H])/(d*e*Log[F]), -(a/(b*F^(e*(c + d*x))))])/(b*s
*t*Log[H])
```

Rubi in Sympy [A] time = 35.7703, size = 60, normalized size = 0.8

$$\frac{H^{t(r+sx)}{}_2F_1\left(\begin{matrix}1,-\frac{st\log(H)}{de\log(F)}\\1-\frac{st\log(H)}{de\log(F)}\end{matrix}\middle|-\frac{F^{e(-c-dx)}a}{b}\right)}{bst\log(H)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(e*(d*x+c))*H**(t*(s*x+r))/(a+b*F**(e*(d*x+c))),x)
```

```
[Out] H**(t*(r + s*x))*hyper((1, -s*t*log(H)/(d*e*log(F))), (1 - s*t*lo
g(H)/(d*e*log(F)),), -F**(e*(-c - d*x))*a/b)/(b*s*t*log(H))
```

Mathematica [A] time = 0.0876424, size = 75, normalized size = 1.

$$-\frac{H^{t(r+sx)}\left(\text{Hypergeometric2F1}\left(1,\frac{st\log(H)}{de\log(F)},\frac{st\log(H)}{de\log(F)}+1,-\frac{bF^{e(c+dx)}}{a}\right)-1\right)}{bst\log(H)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(F^(e*(c + d*x))*H^(t*(r + s*x)))/(a + b*F^(e*(c + d*x))),x]
```

```
[Out] -((H^(t*(r + s*x))*(-1 + Hypergeometric2F1[1, (s*t*Log[H])/(d*e*L
og[F]), 1 + (s*t*Log[H])/(d*e*Log[F]), -((b*F^(e*(c + d*x)))/a)])
)/(b*s*t*Log[H]))
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \frac{F^{e(dx+c)}H^{t(sx+r)}}{a+bF^{e(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e*(d*x+c))*H^(t*(s*x+r))/(a+b*F^(e*(d*x+c))),x)
```

```
[Out] int(F^(e*(d*x+c))*H^(t*(s*x+r))/(a+b*F^(e*(d*x+c))),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-H^{rt}a^2de\int \frac{H^{stx}}{a^2bde\log(F)-a^2bst\log(H)+(F^{2\,ce}b^3de\log(F)-F^{2\,ce}b^3st\log(H))F^{2\,dex}+2\,(F^{ce}ab^2de\log(F)-F^{ce}ab^2st\log}$$
$$+\frac{\left(H^{rt}ade\log(F)+\left(F^{ce}H^{rt}bde\log(F)-F^{ce}H^{rt}bst\log(H)\right)F^{dex}\right)H^{stx}}{abdest\log(F)\log(H)-abs^2t^2\log(H)^2+\left(F^{ce}b^2dest\log(F)\log(H)-F^{ce}b^2s^2t^2\log(H)^2\right)F^{dex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + c)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a),x, algorithm="m
```

```
[Out] -H^(r*t)*a^2*d*e*integrate(H^(s*t*x)/(a^2*b*d*e*log(F) - a^2*b*s*
t*log(H) + (F^(2*c*e)*b^3*d*e*log(F) - F^(2*c*e)*b^3*s*t*log(H))*
F^(2*d*e*x) + 2*(F^(c*e)*a*b^2*d*e*log(F) - F^(c*e)*a*b^2*s*t*log
(H))*F^(d*e*x)), x)*log(F) + (H^(r*t)*a*d*e*log(F) + (F^(c*e)*H^(
r*t)*b*d*e*log(F) - F^(c*e)*H^(r*t)*b*s*t*log(H))*F^(d*e*x))*H^(s
*t*x)/(a*b*d*e*s*t*log(F)*log(H) - a*b*s^2*t^2*log(H)^2 + (F^(c*e
)*b^2*d*e*s*t*log(F)*log(H) - F^(c*e)*b^2*s^2*t^2*log(H)^2)*F^(d*
e*x))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{dex+ce}H^{stx+rt}}{F^{dex+ce}b+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + c)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a),x, algorithm="f
```

```
[Out] integral(F^(d*e*x + c*e)*H^(s*t*x + r*t)/(F^(d*e*x + c*e)*b + a),
 x)
```

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

$$\int \frac{F^{e(c+dx)}H^{t(r+sx)}}{F^{ce}F^{dex}b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e*(d*x+c))*H**(t*(s*x+r))/(a+b*F**(e*(d*x+c))),x)
```

```
[Out] Integral(F**(e*(c + d*x))*H**(t*(r + s*x))/(F**(c*e)*F**(d*e*x)*b
 + a), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)e} H^{(sx+r)t}}{F^{(dx+c)e} b + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + c)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a),x, algorithm="g
```

```
[Out] integrate(F^((d*x + c)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a)
, x)
```

3.68 $\int \frac{F^{e(f+dx)}H^{t(r+sx)}}{a+bF^{e(c+dx)}}\,dx$

Optimal. Leaf size=85

$$\frac{F^{-e(c-f)}H^{t(r+sx)}\text{Hypergeometric2F1}\left(1,-\frac{st\log(H)}{de\log(F)},1-\frac{st\log(H)}{de\log(F)},-\frac{aF^{-e(c+dx)}}{b}\right)}{bst\log(H)}$$

```
[Out] (H^(t*(r + s*x))*Hypergeometric2F1[1, -((s*t*Log[H])/(d*e*Log[F])
), 1 - (s*t*Log[H])/(d*e*Log[F]), -(a/(b*F^(e*(c + d*x))))])/(b*F
^(e*(c - f))*s*t*Log[H])
```

Rubi [A] time = 0.225056, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{F^{-e(c-f)}H^{t(r+sx)}\text{Hypergeometric2F1}\left(1,-\frac{st\log(H)}{de\log(F)},1-\frac{st\log(H)}{de\log(F)},-\frac{aF^{-e(c+dx)}}{b}\right)}{bst\log(H)}$$

Antiderivative was successfully verified.

```
[In]  Int[(F^(e*(f + d*x))*H^(t*(r + s*x)))/(a + b*F^(e*(c + d*x))),x]
```

```
[Out] (H^(t*(r + s*x))*Hypergeometric2F1[1, -((s*t*Log[H])/(d*e*Log[F])
), 1 - (s*t*Log[H])/(d*e*Log[F]), -(a/(b*F^(e*(c + d*x))))])/(b*F
^(e*(c - f))*s*t*Log[H])
```

Rubi in Sympy [A] time = 38.813, size = 66, normalized size = 0.78

$$\frac{F^{-e(c-f)}H^{t(r+sx)}{}_2F_1\left(\begin{matrix}1,-\frac{st\log(H)}{de\log(F)}\\1-\frac{st\log(H)}{de\log(F)}\end{matrix}\middle|-\frac{F^{e(-c-dx)}a}{b}\right)}{bst\log(H)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(e*(d*x+f))*H**(t*(s*x+r))/(a+b*F**(e*(d*x+c))),x)
```

```
[Out] F**(-e*(c - f))*H**(t*(r + s*x))*hyper((1, -s*t*log(H)/(d*e*log(F
))), (1 - s*t*log(H)/(d*e*log(F)),), -F**(e*(-c - d*x))*a/b)/(b*s
*t*log(H))
```

Mathematica [A] time = 0.0886087, size = 84, normalized size = 0.99

$$-\frac{F^{e(f-c)}H^{t(r+sx)}\left(\text{Hypergeometric2F1}\left(1,\frac{st\log(H)}{de\log(F)},\frac{st\log(H)}{de\log(F)}+1,-\frac{bF^{e(c+dx)}}{a}\right)-1\right)}{bst\log(H)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(F^(e*(f + d*x))*H^(t*(r + s*x)))/(a + b*F^(e*(c + d*x))),x]
```

```
[Out] -((F^(e*(-c + f))*H^(t*(r + s*x))*(-1 + Hypergeometric2F1[1, (s*t
*Log[H])/(d*e*Log[F]), 1 + (s*t*Log[H])/(d*e*Log[F]), -((b*F^(e*(
c + d*x)))/a)]))/(b*s*t*Log[H]))
```

Maple [F] time = 0.045, size = 0, normalized size = 0.

$$\int \frac{F^{e(dx+f)}H^{t(sx+r)}}{a+bF^{e(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e*(d*x+f))*H^(t*(s*x+r))/(a+b*F^(e*(d*x+c))),x)
```

```
[Out] int(F^(e*(d*x+f))*H^(t*(s*x+r))/(a+b*F^(e*(d*x+c))),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-F^{ef}H^{rt}a^2de\int \frac{H^{stx}}{F^{ce}a^2bde\log(F)-F^{ce}a^2bst\log(H)+(F^{3\,ce}b^3de\log(F)-F^{3\,ce}b^3st\log(H))F^{2\,dex}+2\,(F^{2\,ce}ab^2de\log(F)-}$$
$$+\frac{\left(F^{ef}H^{rt}ade\log(F)+\left(F^{ce+ef}H^{rt}bde\log(F)-F^{ce+ef}H^{rt}bst\log(H)\right)F^{dex}\right)H^{stx}}{F^{ce}abdest\log(F)\log(H)-F^{ce}abs^2t^2\log(H)^2+\left(F^{2\,ce}b^2dest\log(F)\log(H)-F^{2\,ce}b^2s^2t^2\log(H)^2\right)F^{dex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + f)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a),x, algorithm="m
```

```
[Out] -F^(e*f)*H^(r*t)*a^2*d*e*integrate(H^(s*t*x)/(F^(c*e)*a^2*b*d*e*l
og(F) - F^(c*e)*a^2*b*s*t*log(H) + (F^(3*c*e)*b^3*d*e*log(F) - F^
(3*c*e)*b^3*s*t*log(H))*F^(2*d*e*x) + 2*(F^(2*c*e)*a*b^2*d*e*log(
F) - F^(2*c*e)*a*b^2*s*t*log(H))*F^(d*e*x)), x)*log(F) + (F^(e*f)
*H^(r*t)*a*d*e*log(F) + (F^(c*e + e*f)*H^(r*t)*b*d*e*log(F) - F^(
c*e + e*f)*H^(r*t)*b*s*t*log(H))*F^(d*e*x))*H^(s*t*x)/(F^(c*e)*a*
b*d*e*s*t*log(F)*log(H) - F^(c*e)*a*b*s^2*t^2*log(H)^2 + (F^(2*c*
e)*b^2*d*e*s*t*log(F)*log(H) - F^(2*c*e)*b^2*s^2*t^2*log(H)^2)*F^
(d*e*x))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{dex+ef}H^{stx+rt}}{F^{dex+ce}b+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + f)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a),x, algorithm="f
```

```
[Out] integral(F^(d*e*x + e*f)*H^(s*t*x + r*t)/(F^(d*e*x + c*e)*b + a),
 x)
```

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

$$\int \frac{F^{e(dx+f)}H^{t(r+sx)}}{F^{ce}F^{dex}b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e*(d*x+f))*H**(t*(s*x+r))/(a+b*F**(e*(d*x+c))),x)
```

```
[Out] Integral(F**(e*(d*x + f))*H**(t*(r + s*x))/(F**(c*e)*F**(d*e*x)*b
 + a), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+f)e}H^{(sx+r)t}}{F^{(dx+c)e}b + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + f)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a),x, algorithm="g
```

```
[Out] integrate(F^((d*x + f)*e)*H^((s*x + r)*t)/(F^((d*x + c)*e)*b + a)
, x)
```

3.69 $\int f^{a+bx^2} x^m \, dx$

Optimal. Leaf size=46

$$-\frac{1}{2} f^a x^{m+1} \left(-bx^2 \log(f)\right)^{\frac{1}{2}(-m-1)} \text{Gamma}\left(\frac{m+1}{2}, -bx^2 \log(f)\right)$$

```
[Out] -(f^a*x^(1 + m)*Gamma[(1 + m)/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]
))^((-1 - m)/2))/2
```

Rubi [A] time = 0.0418323, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{1}{2} f^a x^{m+1} \left(-bx^2 \log(f)\right)^{\frac{1}{2}(-m-1)} \text{Gamma}\left(\frac{m+1}{2}, -bx^2 \log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^m,x]
```

```
[Out] -(f^a*x^(1 + m)*Gamma[(1 + m)/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]
))^((-1 - m)/2))/2
```

Rubi in Sympy [A] time = 3.31628, size = 46, normalized size = 1.

$$-\frac{f^a x^{m+1} \left(-bx^2 \log(f)\right)^{-\frac{m}{2}-\frac{1}{2}} \Gamma\left(\frac{m}{2}+\frac{1}{2}, -bx^2 \log(f)\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**m,x)
```

```
[Out] -f**a*x**(m + 1)*(-b*x**2*log(f))**(-m/2 - 1/2)*Gamma(m/2 + 1/2,
-b*x**2*log(f))/2
```

Mathematica [A] time = 0.025781, size = 46, normalized size = 1.

$$-\frac{1}{2} f^a x^{m+1} \left(-bx^2 \log(f)\right)^{\frac{1}{2}(-m-1)} \text{Gamma}\left(\frac{m+1}{2}, -bx^2 \log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^m,x]
```

```
[Out] -(f^a*x^(1 + m)*Gamma[(1 + m)/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]
))^((-1 - m)/2))/2
```

Maple [B] time = 0.046, size = 140, normalized size = 3.

$$\frac{f^a}{2} (-b)^{-\frac{m}{2}-\frac{1}{2}} (\ln(f))^{-\frac{m}{2}-\frac{1}{2}} \left(2 \frac{x^{1+m} (-b)^{m/2+1/2} (\ln(f))^{m/2+1/2} (m/2+1/2) \left(-bx^2 \ln(f)\right)^{-m/2-1/2} (m/2+1/2)}{1+m} + 2 \frac{x^{1+m} (-l}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^m,x)
```

```
[Out] 1/2*f^a*(-b)^(-1/2*m-1/2)*ln(f)^(-1/2*m-1/2)*(2/(1+m)*x^(1+m)*(-b
)^(1/2*m+1/2)*ln(f)^(1/2*m+1/2)*(1/2*m+1/2)*(-b*x^2*ln(f))^(-1/2*
m-1/2)*GAMMA(1/2*m+1/2)+2/(1+m)*x^(1+m)*(-b)^(1/2*m+1/2)*ln(f)^(1
/2*m+1/2)*(-1/2*m-1/2)*(-b*x^2*ln(f))^(-1/2*m-1/2)*GAMMA(1/2*m+1/
2,-b*x^2*ln(f)))
```

Maxima [A] time = 0.845387, size = 51, normalized size = 1.11

$$-\frac{1}{2}\left(-bx^2\log\left(f\right)\right)^{-\frac{1}{2}m-\frac{1}{2}}f^a x^{m+1}\left(\frac{1}{2}m+\frac{1}{2},-bx^2\log\left(f\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^m,x, algorithm="maxima")
```

```
[Out] -1/2*(-b*x^2*log(f))^(-1/2*m - 1/2)*f^a*x^(m + 1)*gamma(1/2*m + 1
/2, -b*x^2*log(f))
```

Fricas [A] time = 0.256735, size = 54, normalized size = 1.17

$$\frac{e^{\left(-\frac{1}{2}(m-1)\log(-b\log(f))+a\log(f)\right)}\left(\frac{1}{2}m+\frac{1}{2},-bx^2\log\left(f\right)\right)}{2\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^m,x, algorithm="fricas")
```

```
[Out] 1/2*e^(-1/2*(m - 1)*log(-b*log(f)) + a*log(f))*gamma(1/2*m + 1/2,
 -b*x^2*log(f))/(b*log(f))
```

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

$$\int f^{a+bx^2}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**m,x)
```

```
[Out] Integral(f**(a + b*x**2)*x**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^2+a}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)*x^m, x)
```

3.70 $\int f^{a+bx^2} x^{11}\, dx$

Optimal. Leaf size=24

$$-\frac{f^a \text{Gamma}\left(6,-bx^2\log(f)\right)}{2b^6\log^6(f)}$$

```
[Out] -(f^a*Gamma[6, -(b*x^2*Log[f])])/(2*b^6*Log[f]^6)
```

Rubi [A] time = 0.0434479, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a \text{Gamma}\left(6,-bx^2\log(f)\right)}{2b^6\log^6(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^2)*x^11,x]

[Out] -(f^a*Gamma[6, -(b*x^2*Log[f])])/(2*b^6*Log[f]^6)
```

Rubi in Sympy [A] time = 3.57467, size = 26, normalized size = 1.08

$$-\frac{f^a\left(6,-bx^2\log(f)\right)}{2b^6\log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**2+a)*x**11,x)

[Out] -f**a*Gamma(6, -b*x**2*log(f))/(2*b**6*log(f)**6)
```

Mathematica [B] time = 0.0209915, size = 77, normalized size = 3.21

$$\frac{f^{a+bx^2}\left(b^5x^{10}\log^5(f)-5b^4x^8\log^4(f)+20b^3x^6\log^3(f)-60b^2x^4\log^2(f)+120bx^2\log(f)-120\right)}{2b^6\log^6(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^2)*x^11,x]

[Out] (f^(a + b*x^2)*(-120 + 120*b*x^2*Log[f] - 60*b^2*x^4*Log[f]^2 + 2
0*b^3*x^6*Log[f]^3 - 5*b^4*x^8*Log[f]^4 + b^5*x^10*Log[f]^5))/(2*
b^6*Log[f]^6)
```

Maple [A] time = 0.016, size = 76, normalized size = 3.2

$$\frac{\left(b^5x^{10}(\ln(f))^5-5\,b^4x^8(\ln(f))^4+20\,b^3x^6(\ln(f))^3-60\,b^2x^4(\ln(f))^2+120\,bx^2\ln(f)-120\right)f^{bx^2+a}}{2\,(\ln(f))^6\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^11,x)
```

```
[Out] 1/2*(b^5*x^10*ln(f)^5-5*b^4*x^8*ln(f)^4+20*b^3*x^6*ln(f)^3-60*b^2
*x^4*ln(f)^2+120*b*x^2*ln(f)-120)*f^(b*x^2+a)/ln(f)^6/b^6
```

Maxima [A] time = 0.759056, size = 124, normalized size = 5.17

$$\frac{\left(b^5 f^a x^{10} \log(f)^5 - 5\, b^4 f^a x^8 \log(f)^4 + 20\, b^3 f^a x^6 \log(f)^3 - 60\, b^2 f^a x^4 \log(f)^2 + 120\, b f^a x^2 \log(f) - 120\, f^a\right) f^{b x^2}}{2\, b^6 \log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^11,x, algorithm="maxima")
```

```
[Out] 1/2*(b^5*f^a*x^10*log(f)^5 - 5*b^4*f^a*x^8*log(f)^4 + 20*b^3*f^a*
x^6*log(f)^3 - 60*b^2*f^a*x^4*log(f)^2 + 120*b*f^a*x^2*log(f) - 1
20*f^a)*f^(b*x^2)/(b^6*log(f)^6)
```

Fricas [A] time = 0.318913, size = 101, normalized size = 4.21

$$\frac{\left(b^5 x^{10} \log(f)^5 - 5\, b^4 x^8 \log(f)^4 + 20\, b^3 x^6 \log(f)^3 - 60\, b^2 x^4 \log(f)^2 + 120\, b x^2 \log(f) - 120\right) f^{b x^2 + a}}{2\, b^6 \log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^11,x, algorithm="fricas")
```

```
[Out] 1/2*(b^5*x^10*log(f)^5 - 5*b^4*x^8*log(f)^4 + 20*b^3*x^6*log(f)^3
 - 60*b^2*x^4*log(f)^2 + 120*b*x^2*log(f) - 120)*f^(b*x^2 + a)/(b
^6*log(f)^6)
```

Sympy [A] time = 0.322528, size = 95, normalized size = 3.96

$$\begin{cases} \frac{f^{a + b x^2} \left(b^5 x^{10} \log(f)^5 - 5 b^4 x^8 \log(f)^4 + 20 b^3 x^6 \log(f)^3 - 60 b^2 x^4 \log(f)^2 + 120 b x^2 \log(f) - 120\right)}{2 b^6 \log(f)^6} & \text{for}\ 2 b^6 \log(f)^6 \neq 0 \\ \frac{x^{12}}{12} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**11,x)
```

```
[Out] Piecewise((f**(a + b*x**2)*(b**5*x**10*log(f)**5 - 5*b**4*x**8*lo
g(f)**4 + 20*b**3*x**6*log(f)**3 - 60*b**2*x**4*log(f)**2 + 120*b
*x**2*log(f) - 120)/(2*b**6*log(f)**6), Ne(2*b**6*log(f)**6, 0)),
 (x**12/12, True))
```

GIAC/XCAS [A] time = 0.240689, size = 107, normalized size = 4.46

$$\frac{\left(b^5 x^{10} \ln(f)^5 - 5\, b^4 x^8 \ln(f)^4 + 20\, b^3 x^6 \ln(f)^3 - 60\, b^2 x^4 \ln(f)^2 + 120\, b x^2 \ln(f) - 120\right) e^{\left(b x^2 \ln(f) + a \ln(f)\right)}}{2\, b^6 \ln(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^11,x, algorithm="giac")
```

```
[Out] 1/2*(b^5*x^10*ln(f)^5 - 5*b^4*x^8*ln(f)^4 + 20*b^3*x^6*ln(f)^3 -
60*b^2*x^4*ln(f)^2 + 120*b*x^2*ln(f) - 120)*e^(b*x^2*ln(f) + a*ln
(f))/(b^6*ln(f)^6)
```

3.71 $\int f^{a+bx^2} x^9 \, dx$

Optimal. Leaf size=24

$$\frac{f^a \text{Gamma}\left(5,-b x^2 \log (f)\right)}{2 b^5 \log ^5(f)}$$

```
[Out] (f^a*Gamma[5, -(b*x^2*Log[f])])/(2*b^5*Log[f]^5)
```

Rubi [A] time = 0.0415684, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{f^a \text{Gamma}\left(5,-b x^2 \log (f)\right)}{2 b^5 \log ^5(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^2)*x^9,x]
```

```
[Out] (f^a*Gamma[5, -(b*x^2*Log[f])])/(2*b^5*Log[f]^5)
```

Rubi in Sympy [A] time = 3.68162, size = 24, normalized size = 1.

$$\frac{f^{a}\left(5, - b x^{2} \log {\left (f \right)}\right)}{2 b^{5} \log {\left (f \right)}^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**2+a)*x**9,x)
```

```
[Out] f**a*Gamma(5, -b*x**2*log(f))/(2*b**5*log(f)**5)
```

Mathematica [B] time = 0.017864, size = 65, normalized size = 2.71

$$\frac{f^{a+b x^2} \left(b^4 x^8 \log ^4(f)-4 b^3 x^6 \log ^3(f)+12 b^2 x^4 \log ^2(f)-24 b x^2 \log (f)+24\right)}{2 b^5 \log ^5(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^2)*x^9,x]
```

```
[Out] (f^(a + b*x^2)*(24 - 24*b*x^2*Log[f] + 12*b^2*x^4*Log[f]^2 - 4*b^
3*x^6*Log[f]^3 + b^4*x^8*Log[f]^4))/(2*b^5*Log[f]^5)
```

Maple [A] time = 0.012, size = 64, normalized size = 2.7

$$\frac{\left({b}^{4}{x}^{8} \left(\ln \left(f \right) \right) ^{4}-4\,{b}^{3}{x}^{6} \left(\ln \left(f \right) \right) ^{3}+12\,{b}^{2}{x}^{4} \left(\ln \left(f \right) \right) ^{2}-24\,b{x}^{2}\ln \left(f \right) +24 \right) {f}^{b{x}^{2}+a}}{2\, \left(\ln \left(f \right) \right) ^{5}{b}^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^9,x)
```

```
[Out] 1/2*(b^4*x^8*ln(f)^4-4*b^3*x^6*ln(f)^3+12*b^2*x^4*ln(f)^2-24*b*x^
2*ln(f)+24)*f^(b*x^2+a)/ln(f)^5/b^5
```

Maxima [A] time = 0.832096, size = 104, normalized size = 4.33

$$\frac{\left(b^4 f^a x^8 \log(f)^4 - 4\,b^3 f^a x^6 \log(f)^3 + 12\,b^2 f^a x^4 \log(f)^2 - 24\,b f^a x^2 \log(f) + 24\,f^a\right) f^{bx^2}}{2\,b^5 \log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^9,x, algorithm="maxima")
```

```
[Out] 1/2*(b^4*f^a*x^8*log(f)^4 - 4*b^3*f^a*x^6*log(f)^3 + 12*b^2*f^a*x
^4*log(f)^2 - 24*b*f^a*x^2*log(f) + 24*f^a)*f^(b*x^2)/(b^5*log(f)
^5)
```

Fricas [A] time = 0.263398, size = 85, normalized size = 3.54

$$\frac{\left(b^4 x^8 \log(f)^4 - 4\,b^3 x^6 \log(f)^3 + 12\,b^2 x^4 \log(f)^2 - 24\,b x^2 \log(f) + 24\right) f^{bx^2+a}}{2\,b^5 \log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^9,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*x^8*log(f)^4 - 4*b^3*x^6*log(f)^3 + 12*b^2*x^4*log(f)^2
- 24*b*x^2*log(f) + 24)*f^(b*x^2 + a)/(b^5*log(f)^5)
```

Sympy [A] time = 0.299704, size = 82, normalized size = 3.42

$$\begin{cases} \frac{f^{a+bx^2}\left(b^4x^8\log(f)^4-4b^3x^6\log(f)^3+12b^2x^4\log(f)^2-24bx^2\log(f)+24\right)}{2b^5\log(f)^5} & \text{for } 2b^5\log(f)^5 \neq 0 \\ \frac{x^{10}}{10} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**9,x)
```

```
[Out] Piecewise((f**(a + b*x**2)*(b**4*x**8*log(f)**4 - 4*b**3*x**6*log
(f)**3 + 12*b**2*x**4*log(f)**2 - 24*b*x**2*log(f) + 24)/(2*b**5*
log(f)**5), Ne(2*b**5*log(f)**5, 0)), (x**10/10, True))
```

GIAC/XCAS [A] time = 0.254026, size = 90, normalized size = 3.75

$$\frac{\left(b^4x^8\ln(f)^4 - 4\,b^3x^6\ln(f)^3 + 12\,b^2x^4\ln(f)^2 - 24\,bx^2\ln(f) + 24\right) e^{\left(bx^2\ln(f)+a\ln(f)\right)}}{2\,b^5\ln(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^9,x, algorithm="giac")
```

```
[Out] 1/2*(b^4*x^8*ln(f)^4 - 4*b^3*x^6*ln(f)^3 + 12*b^2*x^4*ln(f)^2 - 2
4*b*x^2*ln(f) + 24)*e^(b*x^2*ln(f) + a*ln(f))/(b^5*ln(f)^5)
```

3.72 $\int f^{a+bx^2} x^7 \, dx$

Optimal. Leaf size=86

$$-\frac{3f^{a+bx^2}}{b^4\log^4(f)}+\frac{3x^2f^{a+bx^2}}{b^3\log^3(f)}-\frac{3x^4f^{a+bx^2}}{2b^2\log^2(f)}+\frac{x^6f^{a+bx^2}}{2b\log(f)}$$

```
[Out] (-3*f^(a + b*x^2))/(b^4*Log[f]^4) + (3*f^(a + b*x^2)*x^2)/(b^3*Lo
g[f]^3) - (3*f^(a + b*x^2)*x^4)/(2*b^2*Log[f]^2) + (f^(a + b*x^2)
*x^6)/(2*b*Log[f])
```

Rubi [A] time = 0.152245, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{3f^{a+bx^2}}{b^4\log^4(f)}+\frac{3x^2f^{a+bx^2}}{b^3\log^3(f)}-\frac{3x^4f^{a+bx^2}}{2b^2\log^2(f)}+\frac{x^6f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^7,x]
```

```
[Out] (-3*f^(a + b*x^2))/(b^4*Log[f]^4) + (3*f^(a + b*x^2)*x^2)/(b^3*Lo
g[f]^3) - (3*f^(a + b*x^2)*x^4)/(2*b^2*Log[f]^2) + (f^(a + b*x^2)
*x^6)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 15.1668, size = 82, normalized size = 0.95

$$\frac{f^{a+bx^2}x^6}{2b\log(f)}-\frac{3f^{a+bx^2}x^4}{2b^2\log(f)^2}+\frac{3f^{a+bx^2}x^2}{b^3\log(f)^3}-\frac{3f^{a+bx^2}}{b^4\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**7,x)
```

```
[Out] f**(a + b*x**2)*x**6/(2*b*log(f)) - 3*f**(a + b*x**2)*x**4/(2*b**
2*log(f)**2) + 3*f**(a + b*x**2)*x**2/(b**3*log(f)**3) - 3*f**(a
+ b*x**2)/(b**4*log(f)**4)
```

Mathematica [A] time = 0.0155025, size = 53, normalized size = 0.62

$$\frac{f^{a+bx^2}\left(b^3x^6\log^3(f)-3b^2x^4\log^2(f)+6bx^2\log(f)-6\right)}{2b^4\log^4(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^7,x]
```

```
[Out] (f^(a + b*x^2)*(-6 + 6*b*x^2*Log[f] - 3*b^2*x^4*Log[f]^2 + b^3*x^
6*Log[f]^3))/(2*b^4*Log[f]^4)
```

Maple [A] time = 0.012, size = 52, normalized size = 0.6

$$\frac{\left(b^{3} x^{6} \left(\ln \left(f\right)\right)^{3}-3 \, b^{2} x^{4} \left(\ln \left(f\right)\right)^{2}+6 \, b x^{2} \ln \left(f\right)-6\right) \, f^{b x^{2}+a}}{2 \, \left(\ln \left(f\right)\right)^{4} \, b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^7,x)
```

```
[Out] 1/2*(b^3*x^6*ln(f)^3-3*b^2*x^4*ln(f)^2+6*b*x^2*ln(f)-6)*f^(b*x^2+
a)/ln(f)^4/b^4
```

Maxima [A] time = 0.816518, size = 84, normalized size = 0.98

$$\frac{\left(b^{3} f^{a} x^{6} \log \left(f\right)^{3}-3 \, b^{2} f^{a} x^{4} \log \left(f\right)^{2}+6 \, b f^{a} x^{2} \log \left(f\right)-6 \, f^{a}\right) f^{b x^{2}}}{2 \, b^{4} \log \left(f\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^7,x, algorithm="maxima")
```

```
[Out] 1/2*(b^3*f^a*x^6*log(f)^3 - 3*b^2*f^a*x^4*log(f)^2 + 6*b*f^a*x^2*
log(f) - 6*f^a)*f^(b*x^2)/(b^4*log(f)^4)
```

Fricas [A] time = 0.237203, size = 69, normalized size = 0.8

$$\frac{\left(b^{3} x^{6} \log \left(f\right)^{3}-3 \, b^{2} x^{4} \log \left(f\right)^{2}+6 \, b x^{2} \log \left(f\right)-6\right) f^{b x^{2}+a}}{2 \, b^{4} \log \left(f\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^7,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*x^6*log(f)^3 - 3*b^2*x^4*log(f)^2 + 6*b*x^2*log(f) - 6)*
f^(b*x^2 + a)/(b^4*log(f)^4)
```

Sympy [A] time = 0.267173, size = 68, normalized size = 0.79

$$\begin{cases} \frac{f^{a+bx^{2}} \left(b^{3} x^{6} \log{\left(f \right)}^{3}-3 b^{2} x^{4} \log{\left(f \right)}^{2}+6 b x^{2} \log{\left(f \right)}-6\right)}{2 b^{4} \log{\left(f \right)}^{4}} & \text{for}\: 2 b^{4} \log{\left(f \right)}^{4} \neq 0 \\ \frac{x^{8}}{8} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**7,x)
```

```
[Out] Piecewise((f**(a + b*x**2)*(b**3*x**6*log(f)**3 - 3*b**2*x**4*log
(f)**2 + 6*b*x**2*log(f) - 6)/(2*b**4*log(f)**4), Ne(2*b**4*log(f
)**4, 0)), (x**8/8, True))
```

GIAC/XCAS [A] time = 0.289775, size = 74, normalized size = 0.86

$$\frac{\left(b^3x^6\ln\left(f\right)^3-3\,b^2x^4\ln\left(f\right)^2+6\,bx^2\ln\left(f\right)-6\right)e^{\left(bx^2\ln(f)+a\ln(f)\right)}}{2\,b^4\ln\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^7,x, algorithm="giac")
```

```
[Out] 1/2*(b^3*x^6*ln(f)^3 - 3*b^2*x^4*ln(f)^2 + 6*b*x^2*ln(f) - 6)*e^(
b*x^2*ln(f) + a*ln(f))/(b^4*ln(f)^4)
```

3.73 $\int f^{a+bx^2} x^5\,dx$

Optimal. Leaf size=62

$$\frac{f^{a+bx^2}}{b^3\log^3(f)}-\frac{x^2f^{a+bx^2}}{b^2\log^2(f)}+\frac{x^4f^{a+bx^2}}{2b\log(f)}$$

```
[Out] f^(a + b*x^2)/(b^3*Log[f]^3) - (f^(a + b*x^2)*x^2)/(b^2*Log[f]^2)
 + (f^(a + b*x^2)*x^4)/(2*b*Log[f])
```

Rubi [A] time = 0.103509, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{f^{a+bx^2}}{b^3\log^3(f)}-\frac{x^2f^{a+bx^2}}{b^2\log^2(f)}+\frac{x^4f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^5,x]
```

```
[Out] f^(a + b*x^2)/(b^3*Log[f]^3) - (f^(a + b*x^2)*x^2)/(b^2*Log[f]^2)
 + (f^(a + b*x^2)*x^4)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 9.92569, size = 54, normalized size = 0.87

$$\frac{f^{a+bx^2}x^4}{2b\log(f)}-\frac{f^{a+bx^2}x^2}{b^2\log(f)^2}+\frac{f^{a+bx^2}}{b^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**5,x)
```

```
[Out] f**(a + b*x**2)*x**4/(2*b*log(f)) - f**(a + b*x**2)*x**2/(b**2*lo
g(f)**2) + f**(a + b*x**2)/(b**3*log(f)**3)
```

Mathematica [A] time = 0.0140354, size = 41, normalized size = 0.66

$$\frac{f^{a+bx^2}\left(b^2x^4\log^2(f)-2bx^2\log(f)+2\right)}{2b^3\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^5,x]
```

```
[Out] (f^(a + b*x^2)*(2 - 2*b*x^2*Log[f] + b^2*x^4*Log[f]^2))/(2*b^3*Lo
g[f]^3)
```

Maple [A] time = 0.01, size = 40, normalized size = 0.7

$$\frac{\left(b^2x^4(\ln(f))^2-2\,bx^2\ln(f)+2\right)f^{bx^2+a}}{2\,(\ln(f))^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^5,x)
```

```
[Out] 1/2*(b^2*x^4*ln(f)^2-2*b*x^2*ln(f)+2)*f^(b*x^2+a)/ln(f)^3/b^3
```

Maxima [A] time = 0.774554, size = 63, normalized size = 1.02

$$\frac{\left(b^2 f^a x^4 \log\left(f\right)^2 - 2\, b f^a x^2 \log\left(f\right) + 2\, f^a\right) f^{b x^2}}{2\, b^3 \log\left(f\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^5,x, algorithm="maxima")
```

```
[Out] 1/2*(b^2*f^a*x^4*log(f)^2 - 2*b*f^a*x^2*log(f) + 2*f^a)*f^(b*x^2)
/(b^3*log(f)^3)
```

Fricas [A] time = 0.244174, size = 53, normalized size = 0.85

$$\frac{\left(b^2 x^4 \log\left(f\right)^2 - 2\, b x^2 \log\left(f\right) + 2\right) f^{b x^2 + a}}{2\, b^3 \log\left(f\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^5,x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^4*log(f)^2 - 2*b*x^2*log(f) + 2)*f^(b*x^2 + a)/(b^3*lo
g(f)^3)
```

Sympy [A] time = 0.239402, size = 54, normalized size = 0.87

$$\begin{cases} \frac{f^{a + b x^2} \left(b^2 x^4 \log\left(f\right)^2 - 2 b x^2 \log\left(f\right) + 2\right)}{2 b^3 \log\left(f\right)^3} & \text{for}\: 2 b^3 \log\left(f\right)^3 \neq 0 \\ \frac{x^6}{6} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**5,x)
```

```
[Out] Piecewise((f**(a + b*x**2)*(b**2*x**4*log(f)**2 - 2*b*x**2*log(f)
 + 2)/(2*b**3*log(f)**3), Ne(2*b**3*log(f)**3, 0)), (x**6/6, True
))
```

GIAC/XCAS [A] time = 0.248299, size = 58, normalized size = 0.94

$$\frac{\left(b^2 x^4 \ln\left(f\right)^2 - 2\, b x^2 \ln\left(f\right) + 2\right) e^{\left(b x^2 \ln(f) + a \ln(f)\right)}}{2\, b^3 \ln\left(f\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^5,x, algorithm="giac")
```

```
[Out] 1/2*(b^2*x^4*ln(f)^2 - 2*b*x^2*ln(f) + 2)*e^(b*x^2*ln(f) + a*ln(f
))/(b^3*ln(f)^3)
```

3.74 $\int f^{a+bx^2} x^3\,dx$

Optimal. Leaf size=44

$$\frac{x^2 f^{a+bx^2}}{2b\log(f)} - \frac{f^{a+bx^2}}{2b^2\log^2(f)}$$

```
[Out] -f^(a + b*x^2)/(2*b^2*Log[f]^2) + (f^(a + b*x^2)*x^2)/(2*b*Log[f]
)
```

Rubi [A] time = 0.0627055, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{x^2 f^{a+bx^2}}{2b\log(f)} - \frac{f^{a+bx^2}}{2b^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^2)*x^3,x]
```

```
[Out] -f^(a + b*x^2)/(2*b^2*Log[f]^2) + (f^(a + b*x^2)*x^2)/(2*b*Log[f]
)
```

Rubi in Sympy [A] time = 5.74141, size = 36, normalized size = 0.82

$$\frac{f^{a+bx^2}x^2}{2b\log(f)} - \frac{f^{a+bx^2}}{2b^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**2+a)*x**3,x)
```

```
[Out] f**(a + b*x**2)*x**2/(2*b*log(f)) - f**(a + b*x**2)/(2*b**2*log(f
)**2)
```

Mathematica [A] time = 0.010825, size = 29, normalized size = 0.66

$$\frac{f^{a+bx^2}\left(bx^2\log(f) - 1\right)}{2b^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^2)*x^3,x]
```

```
[Out] (f^(a + b*x^2)*(-1 + b*x^2*Log[f]))/(2*b^2*Log[f]^2)
```

Maple [A] time = 0.006, size = 28, normalized size = 0.6

$$\frac{\left(bx^2\ln(f) - 1\right)f^{bx^2+a}}{2\left(\ln(f)\right)^2 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^3,x)
```

```
[Out] 1/2*(b*x^2*ln(f)-1)*f^(b*x^2+a)/b^2/ln(f)^2
```

Maxima [A] time = 0.784616, size = 43, normalized size = 0.98

$$\frac{\left(bf^{a}x^{2}\log\left(f\right)-f^{a}\right)f^{bx^{2}}}{2\,b^{2}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^3,x, algorithm="maxima")
```

```
[Out] 1/2*(b*f^a*x^2*log(f) - f^a)*f^(b*x^2)/(b^2*log(f)^2)
```

Fricas [A] time = 0.251735, size = 36, normalized size = 0.82

$$\frac{\left(bx^{2}\log\left(f\right)-1\right)f^{bx^{2}+a}}{2\,b^{2}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b*x^2*log(f) - 1)*f^(b*x^2 + a)/(b^2*log(f)^2)
```

Sympy [A] time = 0.211122, size = 41, normalized size = 0.93

$$\begin{cases}\frac{f^{a+bx^{2}}\left(bx^{2}\log\left(f\right)-1\right)}{2b^{2}\log\left(f\right)^{2}} & \text{for}\: 2b^{2}\log\left(f\right)^{2}\neq 0\\ \frac{x^{4}}{4} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**3,x)
```

```
[Out] Piecewise((f**(a + b*x**2)*(b*x**2*log(f) - 1)/(2*b**2*log(f)**2)
, Ne(2*b**2*log(f)**2, 0)), (x**4/4, True))
```

GIAC/XCAS [A] time = 0.255, size = 932, normalized size = 21.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^3,x, algorithm="giac")
```

```
[Out] 1/2*(2*((pi*b*x^2*sign(f) - pi*b*x^2)*(pi*b^2*ln(abs(f))*sign(f)
- pi*b^2*ln(abs(f)))/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs
```

```
(f))^2)^2 + 4*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2)
+ (pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2)*(b*x^2*ln(ab
s(f)) - 1)/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2)^2
+ 4*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2))*cos(-1/2*
pi*b*x^2*sign(f) + 1/2*pi*b*x^2 - 1/2*pi*a*sign(f) + 1/2*pi*a) +
((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2)*(pi*b*x^2*sig
n(f) - pi*b*x^2)/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))
^2)^2 + 4*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2) - 4*
(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))*(b*x^2*ln(abs(f))
 - 1)/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2)^2 + 4*(
pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2))*sin(-1/2*pi*b*
x^2*sign(f) + 1/2*pi*b*x^2 - 1/2*pi*a*sign(f) + 1/2*pi*a))*e^(b*x
^2*ln(abs(f)) + a*ln(abs(f))) - 1/4*((2*b*i*x^2*ln(abs(f)) - pi*b
*x^2*sign(f) + pi*b*x^2 - 2*i)*e^(1/2*(pi*b*x^2*(sign(f) - 1) + p
i*a*(sign(f) - 1))*i)/(2*pi*b^2*i*ln(abs(f))*sign(f) - 2*pi*b^2*i
*ln(abs(f)) + pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2) +
 (2*b*i*x^2*ln(abs(f)) + pi*b*x^2*sign(f) - pi*b*x^2 - 2*i)*e^(-1
/2*(pi*b*x^2*(sign(f) - 1) + pi*a*(sign(f) - 1))*i)/(2*pi*b^2*i*l
n(abs(f))*sign(f) - 2*pi*b^2*i*ln(abs(f)) - pi^2*b^2*sign(f) + pi
^2*b^2 - 2*b^2*ln(abs(f))^2))*e^(b*x^2*ln(abs(f)) + a*ln(abs(f)))
/i
```

3.75 $\int f^{a+bx^2} x \, dx$

Optimal. Leaf size=20

$$\frac{f^{a+bx^2}}{2b\log(f)}$$

```
[Out] f^(a + b*x^2)/(2*b*Log[f])
```

Rubi [A] time = 0.023673, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x,x]

[Out] f^(a + b*x^2)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 2.55136, size = 14, normalized size = 0.7

$$\frac{f^{a+bx^2}}{2b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x,x)

[Out] f**(a + b*x**2)/(2*b*log(f))
```

Mathematica [A] time = 0.00388811, size = 20, normalized size = 1.

$$\frac{f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x,x]

[Out] f^(a + b*x^2)/(2*b*Log[f])
```

Maple [A] time = 0.003, size = 19, normalized size = 1.

$$\frac{f^{bx^2+a}}{2\,b\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x,x)
```

```
[Out] 1/2*f^(b*x^2+a)/b/ln(f)
```

Maxima [A] time = 0.762497, size = 24, normalized size = 1.2

$$\frac{f^{bx^2+a}}{2\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x,x, algorithm="maxima")
```

```
[Out] 1/2*f^(b*x^2 + a)/(b*log(f))
```

Fricas [A] time = 0.236463, size = 24, normalized size = 1.2

$$\frac{f^{bx^2+a}}{2\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x,x, algorithm="fricas")
```

```
[Out] 1/2*f^(b*x^2 + a)/(b*log(f))
```

Sympy [A] time = 0.18018, size = 24, normalized size = 1.2

$$\begin{cases} \frac{f^{a+bx^2}}{2b\log\left(f\right)} & \text{for}\ 2b\log\left(f\right) \neq 0 \\ \frac{x^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x,x)
```

```
[Out] Piecewise((f**(a + b*x**2)/(2*b*log(f)), Ne(2*b*log(f), 0)), (x**
2/2, True))
```

GIAC/XCAS [A] time = 0.229338, size = 24, normalized size = 1.2

$$\frac{f^{bx^2+a}}{2\,b\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x,x, algorithm="giac")
```

```
[Out] 1/2*f^(b*x^2 + a)/(b*ln(f))
```

3.76 $\int \frac{f^{a+bx^2}}{x} \, dx$

Optimal. Leaf size=15

$$\frac{1}{2} f^a \text{ExpIntegralEi}\left(bx^2 \log(f)\right)$$

```
[Out] (f^a*ExpIntegralEi[b*x^2*Log[f]])/2
```

Rubi [A] time = 0.0359859, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{2} f^a \text{ExpIntegralEi}\left(bx^2 \log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^2*Log[f]])/2
```

Rubi in Sympy [A] time = 3.02752, size = 14, normalized size = 0.93

$$\frac{f^a \operatorname{Ei}\left(bx^2 \log(f)\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x,x)

[Out] f**a*Ei(b*x**2*log(f))/2
```

Mathematica [A] time = 0.00445448, size = 15, normalized size = 1.

$$\frac{1}{2} f^a \text{ExpIntegralEi}\left(bx^2 \log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^2*Log[f]])/2
```

Maple [A] time = 0.014, size = 16, normalized size = 1.1

$$-\frac{f^a Ei\left(1, -bx^2 \ln(f)\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x,x)
```

```
[Out] -1/2*f^a*Ei(1,-b*x^2*ln(f))
```

Maxima [A] time = 0.833258, size = 18, normalized size = 1.2

$$\frac{1}{2} f^a \text{Ei}\left(bx^2 \log(f)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*Ei(b*x^2*log(f))
```

Fricas [A] time = 0.235601, size = 18, normalized size = 1.2

$$\frac{1}{2} f^a \text{Ei}\left(bx^2 \log(f)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x,x, algorithm="fricas")
```

```
[Out] 1/2*f^a*Ei(b*x^2*log(f))
```

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

$$\int \frac{f^{a+bx^2}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x,x)
```

```
[Out] Integral(f**(a + b*x**2)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x, x)
```

3.77 $\int \frac{f^{a+bx^2}}{x^3} dx$

Optimal. Leaf size=35

$$\frac{1}{2}bf^a \log(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right) - \frac{f^{a+bx^2}}{2x^2}$$

```
[Out] -f^(a + b*x^2)/(2*x^2) + (b*f^a*ExpIntegralEi[b*x^2*Log[f]]*Log[f
])/2
```

Rubi [A] time = 0.0709505, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{2}bf^a \log(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right) - \frac{f^{a+bx^2}}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^3,x]
```

```
[Out] -f^(a + b*x^2)/(2*x^2) + (b*f^a*ExpIntegralEi[b*x^2*Log[f]]*Log[f
])/2
```

Rubi in Sympy [A] time = 5.29423, size = 32, normalized size = 0.91

$$\frac{bf^a \log(f)\,\text{Ei}\left(bx^2\log(f)\right)}{2} - \frac{f^{a+bx^2}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**3,x)
```

```
[Out] b*f**a*log(f)*Ei(b*x**2*log(f))/2 - f**(a + b*x**2)/(2*x**2)
```

Mathematica [A] time = 0.0164974, size = 32, normalized size = 0.91

$$\frac{1}{2}f^a\left(b\log(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right) - \frac{f^{bx^2}}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^3,x]
```

```
[Out] (f^a*(-(f^(b*x^2)/x^2) + b*ExpIntegralEi[b*x^2*Log[f]]*Log[f]))/2
```

Maple [A] time = 0.026, size = 35, normalized size = 1.

$$-\frac{f^a f^{bx^2}}{2\,x^2} - \frac{f^a \ln(f)\, bEi\left(1, -bx^2\ln(f)\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^3,x)

[Out] -1/2*f^a/x^2*f^(b*x^2)-1/2*f^a*ln(f)*b*Ei(1,-b*x^2*ln(f))
```

Maxima [A] time = 0.835912, size = 24, normalized size = 0.69

$$\frac{1}{2}\,bf^{a}\,\left(-1,-bx^{2}\log\left(f\right)\right)\,\log\left(f\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^3,x, algorithm="maxima")

[Out] 1/2*b*f^a*gamma(-1, -b*x^2*log(f))*log(f)
```

Fricas [A] time = 0.248637, size = 47, normalized size = 1.34

$$\frac{bf^{a}x^{2}\mathrm{Ei}\left(bx^{2}\log\left(f\right)\right)\log\left(f\right)-f^{bx^{2}+a}}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^3,x, algorithm="fricas")

[Out] 1/2*(b*f^a*x^2*Ei(b*x^2*log(f))*log(f) - f^(b*x^2 + a))/x^2
```

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

$$\int\frac{f^{a+bx^{2}}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**3,x)

[Out] Integral(f**(a + b*x**2)/x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{bx^{2}+a}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^3,x, algorithm="giac")

[Out] integrate(f^(b*x^2 + a)/x^3, x)
```

3.78 $\int \frac{f^{a+bx^2}}{x^5}\,dx$

Optimal. Leaf size=58

$$\frac{1}{4}b^2f^a\log^2(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-\frac{b\log(f)f^{a+bx^2}}{4x^2}-\frac{f^{a+bx^2}}{4x^4}$$

```
[Out] -f^(a + b*x^2)/(4*x^4) - (b*f^(a + b*x^2)*Log[f])/(4*x^2) + (b^2*
f^a*ExpIntegralEi[b*x^2*Log[f]]*Log[f]^2)/4
```

Rubi [A] time = 0.109683, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{4}b^2f^a\log^2(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-\frac{b\log(f)f^{a+bx^2}}{4x^2}-\frac{f^{a+bx^2}}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^5,x]
```

```
[Out] -f^(a + b*x^2)/(4*x^4) - (b*f^(a + b*x^2)*Log[f])/(4*x^2) + (b^2*
f^a*ExpIntegralEi[b*x^2*Log[f]]*Log[f]^2)/4
```

Rubi in Sympy [A] time = 8.42502, size = 54, normalized size = 0.93

$$\frac{b^2f^a\log(f)^2\,\text{Ei}\left(bx^2\log(f)\right)}{4}-\frac{bf^{a+bx^2}\log(f)}{4x^2}-\frac{f^{a+bx^2}}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**5,x)
```

```
[Out] b**2*f**a*log(f)**2*Ei(b*x**2*log(f))/4 - b*f**(a + b*x**2)*log(f
)/(4*x**2) - f**(a + b*x**2)/(4*x**4)
```

Mathematica [A] time = 0.0305897, size = 48, normalized size = 0.83

$$\frac{f^a\left(b^2x^4\log^2(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-f^{bx^2}\left(bx^2\log(f)+1\right)\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^5,x]
```

```
[Out] (f^a*(b^2*x^4*ExpIntegralEi[b*x^2*Log[f]]*Log[f]^2 - f^(b*x^2)*(1
 + b*x^2*Log[f])))/(4*x^4)
```

Maple [A] time = 0.032, size = 57, normalized size = 1.

$$-\frac{f^af^{bx^2}}{4\,x^4}-\frac{f^a\ln(f)\,bf^{bx^2}}{4\,x^2}-\frac{f^a\left(\ln(f)\right)^2b^2Ei\left(1,-bx^2\ln(f)\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^5,x)
```

```
[Out] -1/4*f^a/x^4*f^(b*x^2)-1/4*f^a*ln(f)*b/x^2*f^(b*x^2)-1/4*f^a*ln(f
)^2*b^2*Ei(1,-b*x^2*ln(f))
```

Maxima [A] time = 0.907287, size = 30, normalized size = 0.52

$$-\frac{1}{2}\,b^2 f^a\,\Gamma\left(-2, -bx^2\log\left(f\right)\right)\log\left(f\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^5,x, algorithm="maxima")
```

```
[Out] -1/2*b^2*f^a*gamma(-2, -b*x^2*log(f))*log(f)^2
```

Fricas [A] time = 0.237264, size = 65, normalized size = 1.12

$$\frac{b^2 f^a x^4 \mathrm{Ei}\left(bx^2\log\left(f\right)\right)\log\left(f\right)^2 - \left(bx^2\log\left(f\right)+1\right)f^{bx^2+a}}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^5,x, algorithm="fricas")
```

```
[Out] 1/4*(b^2*f^a*x^4*Ei(b*x^2*log(f))*log(f)^2 - (b*x^2*log(f) + 1)*f
^(b*x^2 + a))/x^4
```

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

$$\int \frac{f^{a+bx^2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**5,x)
```

```
[Out] Integral(f**(a + b*x**2)/x**5, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^5,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^5, x)
```

3.79 $\int \frac{f^{a+bx^2}}{x^7}\,dx$

Optimal. Leaf size=81

$$\frac{1}{12}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-\frac{b^2\log^2(f)f^{a+bx^2}}{12x^2}-\frac{f^{a+bx^2}}{6x^6}-\frac{b\log(f)f^{a+bx^2}}{12x^4}$$

```
[Out] -f^(a + b*x^2)/(6*x^6) - (b*f^(a + b*x^2)*Log[f])/(12*x^4) - (b^2
*f^(a + b*x^2)*Log[f]^2)/(12*x^2) + (b^3*f^a*ExpIntegralEi[b*x^2*
Log[f]]*Log[f]^3)/12
```

Rubi [A] time = 0.147347, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{12}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-\frac{b^2\log^2(f)f^{a+bx^2}}{12x^2}-\frac{f^{a+bx^2}}{6x^6}-\frac{b\log(f)f^{a+bx^2}}{12x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^7,x]
```

```
[Out] -f^(a + b*x^2)/(6*x^6) - (b*f^(a + b*x^2)*Log[f])/(12*x^4) - (b^2
*f^(a + b*x^2)*Log[f]^2)/(12*x^2) + (b^3*f^a*ExpIntegralEi[b*x^2*
Log[f]]*Log[f]^3)/12
```

Rubi in Sympy [A] time = 12.0988, size = 76, normalized size = 0.94

$$\frac{b^3 f^a \log(f)^3 \operatorname{Ei}\left(bx^2\log(f)\right)}{12}-\frac{b^2 f^{a+bx^2}\log(f)^2}{12x^2}-\frac{bf^{a+bx^2}\log(f)}{12x^4}-\frac{f^{a+bx^2}}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**7,x)
```

```
[Out] b**3*f**a*log(f)**3*Ei(b*x**2*log(f))/12 - b**2*f**(a + b*x**2)*l
og(f)**2/(12*x**2) - b*f**(a + b*x**2)*log(f)/(12*x**4) - f**(a +
 b*x**2)/(6*x**6)
```

Mathematica [A] time = 0.0394622, size = 59, normalized size = 0.73

$$\frac{f^a\left(b^3x^6\log^3(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-f^{bx^2}\left(b^2x^4\log^2(f)+bx^2\log(f)+2\right)\right)}{12x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^7,x]
```

```
[Out] (f^a*(b^3*x^6*ExpIntegralEi[b*x^2*Log[f]]*Log[f]^3 - f^(b*x^2)*(2
 + b*x^2*Log[f] + b^2*x^4*Log[f]^2)))/(12*x^6)
```

Maple [A] time = 0.039, size = 79, normalized size = 1.

$$-\frac{f^a f^{bx^2}}{6\,x^6}-\frac{f^a\ln(f)\,bf^{bx^2}}{12\,x^4}-\frac{f^a(\ln(f))^2\,b^2f^{bx^2}}{12\,x^2}-\frac{f^a(\ln(f))^3\,b^3 Ei\left(1,-bx^2\ln(f)\right)}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^7,x)
```

```
[Out] -1/6*f^a/x^6*f^(b*x^2)-1/12*f^a*ln(f)*b/x^4*f^(b*x^2)-1/12*f^a*ln
(f)^2*b^2/x^2*f^(b*x^2)-1/12*f^a*ln(f)^3*b^3*Ei(1,-b*x^2*ln(f))
```

Maxima [A] time = 0.951511, size = 30, normalized size = 0.37

$$\frac{1}{2}\,b^3 f^a\,\Gamma\left(-3,-bx^2\log\left(f\right)\right)\log\left(f\right)^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^7,x, algorithm="maxima")
```

```
[Out] 1/2*b^3*f^a*gamma(-3, -b*x^2*log(f))*log(f)^3
```

Fricas [A] time = 0.270002, size = 80, normalized size = 0.99

$$\frac{b^3 f^a x^6 \mathrm{Ei}\left(bx^2\log\left(f\right)\right)\log\left(f\right)^3-\left(b^2x^4\log\left(f\right)^2+bx^2\log\left(f\right)+2\right)f^{bx^2+a}}{12\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^7,x, algorithm="fricas")
```

```
[Out] 1/12*(b^3*f^a*x^6*Ei(b*x^2*log(f))*log(f)^3 - (b^2*x^4*log(f)^2 +
 b*x^2*log(f) + 2)*f^(b*x^2 + a))/x^6
```

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

$$\int \frac{f^{a+bx^2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**7,x)
```

```
[Out] Integral(f**(a + b*x**2)/x**7, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^7,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^7, x)
```

3.80 $\int \frac{f^{a+bx^2}}{x^9}\,dx$

Optimal. Leaf size=24

$$-\frac{1}{2}b^4 f^a \log^4(f)\mathrm{Gamma}\left(-4,-bx^2\log(f)\right)$$

```
[Out] -(b^4*f^a*Gamma[-4, -(b*x^2*Log[f])]*Log[f]^4)/2
```

Rubi [A] time = 0.0383311, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{1}{2}b^4 f^a \log^4(f)\mathrm{Gamma}\left(-4,-bx^2\log(f)\right)$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^2)/x^9,x]

[Out] -(b^4*f^a*Gamma[-4, -(b*x^2*Log[f])]*Log[f]^4)/2
```

Rubi in Sympy [A] time = 3.609, size = 27, normalized size = 1.12

$$-\frac{b^4 f^a\left(-4,-bx^2\log(f)\right)\log(f)^4}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**2+a)/x**9,x)

[Out] -b**4*f**a*Gamma(-4, -b*x**2*log(f))*log(f)**4/2
```

Mathematica [B] time = 0.0476205, size = 71, normalized size = 2.96

$$\frac{f^a\left(b^4x^8\log^4(f)\mathrm{ExpIntegralEi}\left(bx^2\log(f)\right)-f^{bx^2}\left(b^3x^6\log^3(f)+b^2x^4\log^2(f)+2bx^2\log(f)+6\right)\right)}{48x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^2)/x^9,x]

[Out] (f^a*(b^4*x^8*ExpIntegralEi[b*x^2*Log[f]]*Log[f]^4 - f^(b*x^2)*(6
 + 2*b*x^2*Log[f] + b^2*x^4*Log[f]^2 + b^3*x^6*Log[f]^3)))/(48*x^
8)
```

Maple [B] time = 0.048, size = 101, normalized size = 4.2

$$-\frac{f^a f^{bx^2}}{8\,x^8}-\frac{f^a\ln(f)\,b f^{bx^2}}{24\,x^6}-\frac{f^a(\ln(f))^2 b^2 f^{bx^2}}{48\,x^4}-\frac{f^a(\ln(f))^3 b^3 f^{bx^2}}{48\,x^2}-\frac{f^a(\ln(f))^4 b^4 Ei\left(1,-bx^2\ln(f)\right)}{48}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^9,x)
```

```
[Out] -1/8*f^a/x^8*f^(b*x^2)-1/24*f^a*ln(f)*b/x^6*f^(b*x^2)-1/48*f^a*ln
(f)^2*b^2/x^4*f^(b*x^2)-1/48*f^a*ln(f)^3*b^3/x^2*f^(b*x^2)-1/48*f
^a*ln(f)^4*b^4*Ei(1,-b*x^2*ln(f))
```

Maxima [A] time = 0.825454, size = 30, normalized size = 1.25

$$-\frac{1}{2}\,b^4 f^a\,\left(-4,-bx^2\log\left(f\right)\right)\log\left(f\right)^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^9,x, algorithm="maxima")
```

```
[Out] -1/2*b^4*f^a*gamma(-4, -b*x^2*log(f))*log(f)^4
```

Fricas [A] time = 0.256069, size = 96, normalized size = 4.

$$\frac{b^4 f^a x^8 \mathrm{Ei}\left(bx^2\log\left(f\right)\right)\log\left(f\right)^4-\left(b^3x^6\log\left(f\right)^3+b^2x^4\log\left(f\right)^2+2\,bx^2\log\left(f\right)+6\right)f^{bx^2+a}}{48\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^9,x, algorithm="fricas")
```

```
[Out] 1/48*(b^4*f^a*x^8*Ei(b*x^2*log(f))*log(f)^4 - (b^3*x^6*log(f)^3 +
 b^2*x^4*log(f)^2 + 2*b*x^2*log(f) + 6)*f^(b*x^2 + a))/x^8
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**9,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^9,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^9, x)
```

3.81 $\int \frac{f^{a+bx^2}}{x^{11}}\,dx$

Optimal. Leaf size=24

$$\frac{1}{2}b^5 f^a \log^5(f)\text{Gamma}\left(-5,-bx^2\log(f)\right)$$

```
[Out] (b^5*f^a*Gamma[-5, -(b*x^2*Log[f])]*Log[f]^5)/2
```

Rubi [A] time = 0.0392261, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{1}{2}b^5 f^a \log^5(f)\text{Gamma}\left(-5,-bx^2\log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^11,x]

[Out] (b^5*f^a*Gamma[-5, -(b*x^2*Log[f])]*Log[f]^5)/2
```

Rubi in Sympy [A] time = 3.6059, size = 26, normalized size = 1.08

$$\frac{b^5 f^a\left(-5,-bx^2\log(f)\right)\log(f)^5}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**11,x)

[Out] b**5*f**a*Gamma(-5, -b*x**2*log(f))*log(f)**5/2
```

Mathematica [B] time = 0.0543664, size = 83, normalized size = 3.46

$$\frac{f^a\left(b^5x^{10}\log^5(f)\text{ExpIntegralEi}\left(bx^2\log(f)\right)-f^{bx^2}\left(b^4x^8\log^4(f)+b^3x^6\log^3(f)+2b^2x^4\log^2(f)+6bx^2\log(f)+24\right)\right)}{240x^{10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^11,x]

[Out] (f^a*(b^5*x^10*ExpIntegralEi[b*x^2*Log[f]]*Log[f]^5 - f^(b*x^2)*(
24 + 6*b*x^2*Log[f] + 2*b^2*x^4*Log[f]^2 + b^3*x^6*Log[f]^3 + b^4
*x^8*Log[f]^4)))/(240*x^10)
```

Maple [B] time = 0.053, size = 123, normalized size = 5.1

$$-\frac{f^a f^{bx^2}}{10\,x^{10}}-\frac{f^a\ln(f)\,bf^{bx^2}}{40\,x^8}-\frac{f^a(\ln(f))^2\,b^2 f^{bx^2}}{120\,x^6}-\frac{f^a(\ln(f))^3\,b^3 f^{bx^2}}{240\,x^4}-\frac{f^a(\ln(f))^4\,b^4 f^{bx^2}}{240\,x^2}-\frac{f^a(\ln(f))^5\,b^5 Ei\left(1,-bx^2\ln(f)\right)}{240}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(b*x^2+a)/x^11,x)
```

```
[Out] -1/10*f^a/x^10*f^(b*x^2)-1/40*f^a*ln(f)*b/x^8*f^(b*x^2)-1/120*f^a
*ln(f)^2*b^2/x^6*f^(b*x^2)-1/240*f^a*ln(f)^3*b^3/x^4*f^(b*x^2)-1/
240*f^a*ln(f)^4*b^4/x^2*f^(b*x^2)-1/240*f^a*ln(f)^5*b^5*Ei(1,-b*x
^2*ln(f))
```

Maxima [A] time = 0.858388, size = 30, normalized size = 1.25

$$\frac{1}{2}\,b^{5}f^{a}\left(-5,-bx^{2}\log\left(f\right)\right)\log\left(f\right)^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)/x^11,x, algorithm="maxima")
```

```
[Out] 1/2*b^5*f^a*gamma(-5, -b*x^2*log(f))*log(f)^5
```

Fricas [A] time = 0.253537, size = 112, normalized size = 4.67

$$\frac{b^{5}f^{a}x^{10}\mathrm{Ei}\left(bx^{2}\log\left(f\right)\right)\log\left(f\right)^{5}-\left(b^{4}x^{8}\log\left(f\right)^{4}+b^{3}x^{6}\log\left(f\right)^{3}+2\,b^{2}x^{4}\log\left(f\right)^{2}+6\,bx^{2}\log\left(f\right)+24\right)f^{bx^{2}+a}}{240\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)/x^11,x, algorithm="fricas")
```

```
[Out] 1/240*(b^5*f^a*x^10*Ei(b*x^2*log(f))*log(f)^5 - (b^4*x^8*log(f)^4
 + b^3*x^6*log(f)^3 + 2*b^2*x^4*log(f)^2 + 6*b*x^2*log(f) + 24)*f
^(b*x^2 + a))/x^10
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(b*x**2+a)/x**11,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^{2}+a}}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)/x^11,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^11, x)
```

3.82 $\int f^{a+bx^2} x^{12}\,dx$

Optimal. Leaf size=34

$$-\frac{x^{13} f^a \text{Gamma}\left(\frac{13}{2}, -bx^2 \log(f)\right)}{2\left(-bx^2 \log(f)\right)^{13/2}}$$

```
[Out] -(f^a*x^13*Gamma[13/2, -(b*x^2*Log[f])])/(2*(-(b*x^2*Log[f]))^(13
/2))
```

Rubi [A] time = 0.0396286, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{x^{13} f^a \text{Gamma}\left(\frac{13}{2}, -bx^2 \log(f)\right)}{2\left(-bx^2 \log(f)\right)^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^12,x]
```

```
[Out] -(f^a*x^13*Gamma[13/2, -(b*x^2*Log[f])])/(2*(-(b*x^2*Log[f]))^(13
/2))
```

Rubi in Sympy [A] time = 3.14685, size = 36, normalized size = 1.06

$$-\frac{f^a x^{13}\left(\frac{13}{2}, -bx^2 \log(f)\right)}{2\left(-bx^2 \log(f)\right)^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**12,x)
```

```
[Out] -f**a*x**13*Gamma(13/2, -b*x**2*log(f))/(2*(-b*x**2*log(f))**(13/
2))
```

Mathematica [B] time = 0.0819979, size = 119, normalized size = 3.5

$$\frac{f^a \left(2\sqrt{b}x\sqrt{\log(f)}f^{bx^2}\left(32b^5x^{10}\log^5(f) - 176b^4x^8\log^4(f) + 792b^3x^6\log^3(f) - 2772b^2x^4\log^2(f) + 6930bx^2\log(f) - 1039\right.\right.}{128b^{13/2}\log^{\frac{13}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^12,x]
```

```
[Out] (f^a*(10395*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]] + 2*Sqrt[b]*f^(
b*x^2)*x*Sqrt[Log[f]]*(-10395 + 6930*b*x^2*Log[f] - 2772*b^2*x^4*
Log[f]^2 + 792*b^3*x^6*Log[f]^3 - 176*b^4*x^8*Log[f]^4 + 32*b^5*x
^10*Log[f]^5)))/(128*b^(13/2)*Log[f]^(13/2))
```

Maple [A] time = 0.118, size = 164, normalized size = 4.8

$$\frac{f^a f^{bx^2} x^{11}}{2 b \ln(f)} - \frac{11 f^a x^9 f^{bx^2}}{4 (\ln(f))^2 b^2} + \frac{99 f^a x^7 f^{bx^2}}{8 (\ln(f))^3 b^3} - \frac{693 f^a x^5 f^{bx^2}}{16 (\ln(f))^4 b^4} + \frac{3465 f^a x^3 f^{bx^2}}{32 (\ln(f))^5 b^5} - \frac{10395 f^a x f^{bx^2}}{64 (\ln(f))^6 b^6} + \frac{10395 f^a \sqrt{\pi}}{128 (\ln(f))^6 b^6} Erf\left(\sqrt{-b \ln(f)} x\right) \frac{1}{\sqrt{-b \ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(b*x^2+a)*x^12,x)
```

```
[Out] 1/2*f^a*f^(b*x^2)*x^11/ln(f)/b-11/4*f^a/ln(f)^2/b^2*x^9*f^(b*x^2)
+99/8*f^a/ln(f)^3/b^3*x^7*f^(b*x^2)-693/16*f^a/ln(f)^4/b^4*x^5*f^
(b*x^2)+3465/32*f^a/ln(f)^5/b^5*x^3*f^(b*x^2)-10395/64*f^a/ln(f)^
6/b^6*x*f^(b*x^2)+10395/128*f^a/ln(f)^6/b^6*Pi^(1/2)/(-b*ln(f))^(
1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.794818, size = 171, normalized size = 5.03

$$\frac{\left(32 b^5 f^a x^{11} \log(f)^5 - 176 b^4 f^a x^9 \log(f)^4 + 792 b^3 f^a x^7 \log(f)^3 - 2772 b^2 f^a x^5 \log(f)^2 + 6930 b f^a x^3 \log(f) - 10395 f^a x\right.}{64 b^6 \log(f)^6} + \frac{10395 \sqrt{\pi} f^a \operatorname{erf}\left(\sqrt{-b \log(f)} x\right)}{128 \sqrt{-b \log(f)} b^6 \log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)*x^12,x, algorithm="maxima")
```

```
[Out] 1/64*(32*b^5*f^a*x^11*log(f)^5 - 176*b^4*f^a*x^9*log(f)^4 + 792*b
^3*f^a*x^7*log(f)^3 - 2772*b^2*f^a*x^5*log(f)^2 + 6930*b*f^a*x^3*
log(f) - 10395*f^a*x)*f^(b*x^2)/(b^6*log(f)^6) + 10395/128*sqrt(p
i)*f^a*erf(sqrt(-b*log(f))*x)/(sqrt(-b*log(f))*b^6*log(f)^6)
```

Fricas [A] time = 0.255572, size = 153, normalized size = 4.5

$$\frac{2 \left(32 b^5 x^{11} \log(f)^5 - 176 b^4 x^9 \log(f)^4 + 792 b^3 x^7 \log(f)^3 - 2772 b^2 x^5 \log(f)^2 + 6930 b x^3 \log(f) - 10395 x\right) \sqrt{-b \log(f)} f^{\cdots}}{128 \sqrt{-b \log(f)} b^6 \log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)*x^12,x, algorithm="fricas")
```

```
[Out] 1/128*(2*(32*b^5*x^11*log(f)^5 - 176*b^4*x^9*log(f)^4 + 792*b^3*x
^7*log(f)^3 - 2772*b^2*x^5*log(f)^2 + 6930*b*x^3*log(f) - 10395*x
)*sqrt(-b*log(f))*f^(b*x^2 + a) + 10395*sqrt(pi)*f^a*erf(sqrt(-b*
log(f))*x))/(sqrt(-b*log(f))*b^6*log(f)^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**12,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.253143, size = 159, normalized size = 4.68

$$\frac{\left(32\,b^5x^{11}\ln\left(f\right)^5 - 176\,b^4x^9\ln\left(f\right)^4 + 792\,b^3x^7\ln\left(f\right)^3 - 2772\,b^2x^5\ln\left(f\right)^2 + 6930\,bx^3\ln\left(f\right) - 10395\,x\right)e^{\left(bx^2\ln(f)+a\ln(f)\right)}}{64\,b^6\ln\left(f\right)^6} - \frac{10395\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(f\right)}x\right)e^{\left(a\ln(f)\right)}}{128\,\sqrt{-b\ln\left(f\right)}b^6\ln\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^12,x, algorithm="giac")
```

```
[Out] 1/64*(32*b^5*x^11*ln(f)^5 - 176*b^4*x^9*ln(f)^4 + 792*b^3*x^7*ln(
f)^3 - 2772*b^2*x^5*ln(f)^2 + 6930*b*x^3*ln(f) - 10395*x)*e^(b*x^
2*ln(f) + a*ln(f))/(b^6*ln(f)^6) - 10395/128*sqrt(pi)*erf(-sqrt(-
b*ln(f))*x)*e^(a*ln(f))/(sqrt(-b*ln(f))*b^6*ln(f)^6)
```

3.83 $\int f^{a+bx^2} x^{10}\, dx$

Optimal. Leaf size=34

$$-\frac{x^{11} f^a \text{Gamma}\left(\frac{11}{2}, -bx^2 \log(f)\right)}{2\left(-bx^2 \log(f)\right)^{11/2}}$$

```
[Out] -(f^a*x^11*Gamma[11/2, -(b*x^2*Log[f])])/(2*(-(b*x^2*Log[f]))^(11
/2))
```

Rubi [A] time = 0.0391461, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{x^{11} f^a \text{Gamma}\left(\frac{11}{2}, -bx^2 \log(f)\right)}{2\left(-bx^2 \log(f)\right)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^10,x]
```

```
[Out] -(f^a*x^11*Gamma[11/2, -(b*x^2*Log[f])])/(2*(-(b*x^2*Log[f]))^(11
/2))
```

Rubi in Sympy [A] time = 3.15146, size = 36, normalized size = 1.06

$$-\frac{f^a x^{11}\left(\frac{11}{2}, -bx^2 \log(f)\right)}{2\left(-bx^2 \log(f)\right)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**10,x)
```

```
[Out] -f**a*x**11*Gamma(11/2, -b*x**2*log(f))/(2*(-b*x**2*log(f))**(11/
2))
```

Mathematica [B] time = 0.0707825, size = 107, normalized size = 3.15

$$\frac{f^a\left(2\sqrt{b}x\sqrt{\log(f)}f^{bx^2}\left(16b^4x^8\log^4(f)-72b^3x^6\log^3(f)+252b^2x^4\log^2(f)-630bx^2\log(f)+945\right)-945\sqrt{\pi}\text{Erfi}\left(\sqrt{b}x\sqrt{\text{lo}\ldots\right.\right.}{64b^{11/2}\log^{\frac{11}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^10,x]
```

```
[Out] (f^a*(-945*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]] + 2*Sqrt[b]*f^(b
*x^2)*x*Sqrt[Log[f]]*(945 - 630*b*x^2*Log[f] + 252*b^2*x^4*Log[f]
^2 - 72*b^3*x^6*Log[f]^3 + 16*b^4*x^8*Log[f]^4)))/(64*b^(11/2)*Lo
g[f]^(11/2))
```

Maple [A] time = 0.044, size = 142, normalized size = 4.2

$$\frac{f^{a}x^{9}f^{bx^{2}}}{2b\ln(f)}-\frac{9f^{a}x^{7}f^{bx^{2}}}{4(\ln(f))^{2}b^{2}}+\frac{63f^{a}x^{5}f^{bx^{2}}}{8(\ln(f))^{3}b^{3}}-\frac{315f^{a}x^{3}f^{bx^{2}}}{16(\ln(f))^{4}b^{4}}+\frac{945f^{a}xf^{bx^{2}}}{32(\ln(f))^{5}b^{5}}-\frac{945f^{a}\sqrt{\pi}}{64(\ln(f))^{5}b^{5}}Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^10,x)
```

```
[Out] 1/2*f^a/ln(f)/b*x^9*f^(b*x^2)-9/4*f^a/ln(f)^2/b^2*x^7*f^(b*x^2)+6
3/8*f^a/ln(f)^3/b^3*x^5*f^(b*x^2)-315/16*f^a/ln(f)^4/b^4*x^3*f^(b
*x^2)+945/32*f^a/ln(f)^5/b^5*x*f^(b*x^2)-945/64*f^a/ln(f)^5/b^5*P
i^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.780448, size = 151, normalized size = 4.44

$$\frac{\left(16b^{4}f^{a}x^{9}\log(f)^{4}-72b^{3}f^{a}x^{7}\log(f)^{3}+252b^{2}f^{a}x^{5}\log(f)^{2}-630bf^{a}x^{3}\log(f)+945f^{a}x\right)f^{bx^{2}}}{32b^{5}\log(f)^{5}}-\frac{945\sqrt{\pi}f^{a}\operatorname{erf}\left(\sqrt{-b\log(f)}x\right)}{64\sqrt{-b\log(f)}b^{5}\log(f)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^10,x, algorithm="maxima")
```

```
[Out] 1/32*(16*b^4*f^a*x^9*log(f)^4 - 72*b^3*f^a*x^7*log(f)^3 + 252*b^2
*f^a*x^5*log(f)^2 - 630*b*f^a*x^3*log(f) + 945*f^a*x)*f^(b*x^2)/(
b^5*log(f)^5) - 945/64*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x)/(sqrt(
-b*log(f))*b^5*log(f)^5)
```

Fricas [A] time = 0.249502, size = 136, normalized size = 4.

$$\frac{2\left(16b^{4}x^{9}\log(f)^{4}-72b^{3}x^{7}\log(f)^{3}+252b^{2}x^{5}\log(f)^{2}-630bx^{3}\log(f)+945x\right)\sqrt{-b\log(f)}f^{bx^{2}+a}-945\sqrt{\pi}f^{a}\operatorname{erf}\left(\sqrt{-\right.}{64\sqrt{-b\log(f)}b^{5}\log(f)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^10,x, algorithm="fricas")
```

```
[Out] 1/64*(2*(16*b^4*x^9*log(f)^4 - 72*b^3*x^7*log(f)^3 + 252*b^2*x^5*
log(f)^2 - 630*b*x^3*log(f) + 945*x)*sqrt(-b*log(f))*f^(b*x^2 + a
) - 945*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x))/(sqrt(-b*log(f))*b^5
*log(f)^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A]   time = 0.246913, size = 143, normalized size = 4.21

$$\frac{\left(16\,b^4x^9\ln\left(f\right)^4 - 72\,b^3x^7\ln\left(f\right)^3 + 252\,b^2x^5\ln\left(f\right)^2 - 630\,bx^3\ln\left(f\right) + 945\,x\right)e^{\left(bx^2\ln(f) + a\ln(f)\right)}}{32\,b^5\ln\left(f\right)^5} + \frac{945\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(f\right)}x\right)\,e^{\left(a\ln(f)\right)}}{64\,\sqrt{-b\ln\left(f\right)}b^5\ln\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^10,x, algorithm="giac")
```

```
[Out] 1/32*(16*b^4*x^9*ln(f)^4 - 72*b^3*x^7*ln(f)^3 + 252*b^2*x^5*ln(f)
^2 - 630*b*x^3*ln(f) + 945*x)*e^(b*x^2*ln(f) + a*ln(f))/(b^5*ln(f
)^5) + 945/64*sqrt(pi)*erf(-sqrt(-b*ln(f))*x)*e^(a*ln(f))/(sqrt(-
b*ln(f))*b^5*ln(f)^5)
```

3.84 $\int f^{a+bx^2} x^8 \, dx$

Optimal. Leaf size=128

$$\frac{105\sqrt{\pi} f^a \text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{32b^{9/2}\log^{\frac{9}{2}}(f)} - \frac{105x f^{a+bx^2}}{16b^4\log^4(f)} + \frac{35x^3 f^{a+bx^2}}{8b^3\log^3(f)} - \frac{7x^5 f^{a+bx^2}}{4b^2\log^2(f)} + \frac{x^7 f^{a+bx^2}}{2b\log(f)}$$

```
[Out] (105*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(32*b^(9/2)*Log[f
]^(9/2)) - (105*f^(a + b*x^2)*x)/(16*b^4*Log[f]^4) + (35*f^(a + b
*x^2)*x^3)/(8*b^3*Log[f]^3) - (7*f^(a + b*x^2)*x^5)/(4*b^2*Log[f]
^2) + (f^(a + b*x^2)*x^7)/(2*b*Log[f])
```

Rubi [A] time = 0.238543, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{105\sqrt{\pi} f^a \text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{32b^{9/2}\log^{\frac{9}{2}}(f)} - \frac{105x f^{a+bx^2}}{16b^4\log^4(f)} + \frac{35x^3 f^{a+bx^2}}{8b^3\log^3(f)} - \frac{7x^5 f^{a+bx^2}}{4b^2\log^2(f)} + \frac{x^7 f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^8,x]
```

```
[Out] (105*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(32*b^(9/2)*Log[f
]^(9/2)) - (105*f^(a + b*x^2)*x)/(16*b^4*Log[f]^4) + (35*f^(a + b
*x^2)*x^3)/(8*b^3*Log[f]^3) - (7*f^(a + b*x^2)*x^5)/(4*b^2*Log[f]
^2) + (f^(a + b*x^2)*x^7)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 23.1154, size = 126, normalized size = 0.98

$$\frac{f^{a+bx^2}x^7}{2b\log(f)} - \frac{7f^{a+bx^2}x^5}{4b^2\log(f)^2} + \frac{35f^{a+bx^2}x^3}{8b^3\log(f)^3} - \frac{105f^{a+bx^2}x}{16b^4\log(f)^4} + \frac{105\sqrt{\pi} f^a \operatorname{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{32b^{\frac{9}{2}}\log(f)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**8,x)
```

```
[Out] f**(a + b*x**2)*x**7/(2*b*log(f)) - 7*f**(a + b*x**2)*x**5/(4*b**
2*log(f)**2) + 35*f**(a + b*x**2)*x**3/(8*b**3*log(f)**3) - 105*f
**(a + b*x**2)*x/(16*b**4*log(f)**4) + 105*sqrt(pi)*f**a*erfi(sqr
t(b)*x*sqrt(log(f)))/(32*b**(9/2)*log(f)**(9/2))
```

Mathematica [A] time = 0.0580203, size = 95, normalized size = 0.74

$$\frac{f^a\left(2\sqrt{b}x\sqrt{\log(f)}f^{bx^2}\left(8b^3x^6\log^3(f) - 28b^2x^4\log^2(f) + 70bx^2\log(f) - 105\right) + 105\sqrt{\pi}\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)\right)}{32b^{9/2}\log^{\frac{9}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^8,x]
```

```
[Out] (f^a*(105*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]] + 2*Sqrt[b]*f^(b*
x^2)*x*Sqrt[Log[f]]*(-105 + 70*b*x^2*Log[f] - 28*b^2*x^4*Log[f]^2
```

```
+ 8*b^3*x^6*Log[f]^3)))/(32*b^(9/2)*Log[f]^(9/2))
```

Maple [A] time = 0.038, size = 120, normalized size = 0.9

$$\frac{f^{a}x^{7}f^{bx^{2}}}{2\,b\ln(f)}-\frac{7\,f^{a}x^{5}f^{bx^{2}}}{4\,(\ln(f))^{2}\,b^{2}}+\frac{35\,f^{a}x^{3}f^{bx^{2}}}{8\,(\ln(f))^{3}\,b^{3}}-\frac{105\,f^{a}xf^{bx^{2}}}{16\,(\ln(f))^{4}\,b^{4}}+\frac{105\,f^{a}\sqrt{\pi}}{32\,(\ln(f))^{4}\,b^{4}}Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(b*x^2+a)*x^8,x)
```

```
[Out] 1/2*f^a/ln(f)/b*x^7*f^(b*x^2)-7/4*f^a/ln(f)^2/b^2*x^5*f^(b*x^2)+3
5/8*f^a/ln(f)^3/b^3*x^3*f^(b*x^2)-105/16*f^a/ln(f)^4/b^4*x*f^(b*x
^2)+105/32*f^a/ln(f)^4/b^4*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f
))^(1/2)*x)
```

Maxima [A] time = 0.810383, size = 131, normalized size = 1.02

$$\frac{\left(8\,b^{3}f^{a}x^{7}\log(f)^{3}-28\,b^{2}f^{a}x^{5}\log(f)^{2}+70\,bf^{a}x^{3}\log(f)-105\,f^{a}x\right)f^{bx^{2}}}{16\,b^{4}\log(f)^{4}}+\frac{105\,\sqrt{\pi}f^{a}\,\mathrm{erf}\left(\sqrt{-b\log(f)}x\right)}{32\,\sqrt{-b\log(f)}b^{4}\log(f)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)*x^8,x, algorithm="maxima")
```

```
[Out] 1/16*(8*b^3*f^a*x^7*log(f)^3 - 28*b^2*f^a*x^5*log(f)^2 + 70*b*f^a
*x^3*log(f) - 105*f^a*x)*f^(b*x^2)/(b^4*log(f)^4) + 105/32*sqrt(p
i)*f^a*erf(sqrt(-b*log(f))*x)/(sqrt(-b*log(f))*b^4*log(f)^4)
```

Fricas [A] time = 0.255432, size = 120, normalized size = 0.94

$$\frac{2\left(8\,b^{3}x^{7}\log(f)^{3}-28\,b^{2}x^{5}\log(f)^{2}+70\,bx^{3}\log(f)-105\,x\right)\sqrt{-b\log(f)}f^{bx^{2}+a}+105\,\sqrt{\pi}f^{a}\,\mathrm{erf}\left(\sqrt{-b\log(f)}x\right)}{32\,\sqrt{-b\log(f)}b^{4}\log(f)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)*x^8,x, algorithm="fricas")
```

```
[Out] 1/32*(2*(8*b^3*x^7*log(f)^3 - 28*b^2*x^5*log(f)^2 + 70*b*x^3*log(
f) - 105*x)*sqrt(-b*log(f))*f^(b*x^2 + a) + 105*sqrt(pi)*f^a*erf(
sqrt(-b*log(f))*x))/(sqrt(-b*log(f))*b^4*log(f)^4)
```

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

$$\int f^{a+bx^{2}}x^{8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(b*x**2+a)*x**8,x)
```

```
[Out] Integral(f**(a + b*x**2)*x**8, x)
```

GIAC/XCAS [A] time = 0.230133, size = 127, normalized size = 0.99

$$\frac{\left(8\,b^{3}x^{7}\ln\left(f\right)^{3}-28\,b^{2}x^{5}\ln\left(f\right)^{2}+70\,bx^{3}\ln\left(f\right)-105\,x\right)e^{\left(bx^{2}\ln\left(f\right)+a\ln\left(f\right)\right)}}{16\,b^{4}\ln\left(f\right)^{4}}-\frac{105\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(f\right)}x\right)e^{\left(a\ln\left(f\right)\right)}}{32\,\sqrt{-b\ln\left(f\right)}b^{4}\ln\left(f\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^8,x, algorithm="giac")
```

```
[Out] 1/16*(8*b^3*x^7*ln(f)^3 - 28*b^2*x^5*ln(f)^2 + 70*b*x^3*ln(f) - 1
05*x)*e^(b*x^2*ln(f) + a*ln(f))/(b^4*ln(f)^4) - 105/32*sqrt(pi)*e
rf(-sqrt(-b*ln(f))*x)*e^(a*ln(f))/(sqrt(-b*ln(f))*b^4*ln(f)^4)
```

3.85 $\int f^{a+bx^2} x^6 \, dx$

Optimal. Leaf size=105

$$-\frac{15\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{16b^{7/2}\log^{\frac{7}{2}}(f)}+\frac{15xf^{a+bx^2}}{8b^3\log^3(f)}-\frac{5x^3f^{a+bx^2}}{4b^2\log^2(f)}+\frac{x^5f^{a+bx^2}}{2b\log(f)}$$

```
[Out] (-15*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(16*b^(7/2)*Log[f
]^(7/2)) + (15*f^(a + b*x^2)*x)/(8*b^3*Log[f]^3) - (5*f^(a + b*x^
2)*x^3)/(4*b^2*Log[f]^2) + (f^(a + b*x^2)*x^5)/(2*b*Log[f])
```

Rubi [A] time = 0.1527, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{15\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{16b^{7/2}\log^{\frac{7}{2}}(f)}+\frac{15xf^{a+bx^2}}{8b^3\log^3(f)}-\frac{5x^3f^{a+bx^2}}{4b^2\log^2(f)}+\frac{x^5f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^6,x]
```

```
[Out] (-15*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(16*b^(7/2)*Log[f
]^(7/2)) + (15*f^(a + b*x^2)*x)/(8*b^3*Log[f]^3) - (5*f^(a + b*x^
2)*x^3)/(4*b^2*Log[f]^2) + (f^(a + b*x^2)*x^5)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 16.3757, size = 102, normalized size = 0.97

$$\frac{f^{a+bx^2}x^5}{2b\log(f)}-\frac{5f^{a+bx^2}x^3}{4b^2\log(f)^2}+\frac{15f^{a+bx^2}x}{8b^3\log(f)^3}-\frac{15\sqrt{\pi}f^a\,\text{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{16b^{\frac{7}{2}}\log(f)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**6,x)
```

```
[Out] f**(a + b*x**2)*x**5/(2*b*log(f)) - 5*f**(a + b*x**2)*x**3/(4*b**
2*log(f)**2) + 15*f**(a + b*x**2)*x/(8*b**3*log(f)**3) - 15*sqrt(
pi)*f**a*erfi(sqrt(b)*x*sqrt(log(f)))/(16*b**(7/2)*log(f)**(7/2))
```

Mathematica [A] time = 0.0503708, size = 83, normalized size = 0.79

$$\frac{f^a\left(2\sqrt{b}x\sqrt{\log(f)}f^{bx^2}\left(4b^2x^4\log^2(f)-10bx^2\log(f)+15\right)-15\sqrt{\pi}\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)\right)}{16b^{7/2}\log^{\frac{7}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^6,x]
```

```
[Out] (f^a*(-15*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]] + 2*Sqrt[b]*f^(b*
x^2)*x*Sqrt[Log[f]]*(15 - 10*b*x^2*Log[f] + 4*b^2*x^4*Log[f]^2)))
/(16*b^(7/2)*Log[f]^(7/2))
```

Maple [A] time = 0.033, size = 98, normalized size = 0.9

$$\frac{f^{a}x^{5}f^{bx^{2}}}{2\,b\ln\left(f\right)}-\frac{5\,f^{a}x^{3}f^{bx^{2}}}{4\,\left(\ln\left(f\right)\right)^{2}b^{2}}+\frac{15\,f^{a}xf^{bx^{2}}}{8\,\left(\ln\left(f\right)\right)^{3}b^{3}}-\frac{15\,f^{a}\sqrt{\pi}}{16\,\left(\ln\left(f\right)\right)^{3}b^{3}}Erf\left(\sqrt{-b\ln\left(f\right)}x\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^6,x)
```

```
[Out] 1/2*f^a/ln(f)/b*x^5*f^(b*x^2)-5/4*f^a/ln(f)^2/b^2*x^3*f^(b*x^2)+1
5/8*f^a/ln(f)^3/b^3*x*f^(b*x^2)-15/16*f^a/ln(f)^3/b^3*Pi^(1/2)/(-
b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.814119, size = 111, normalized size = 1.06

$$\frac{\left(4\,b^{2}f^{a}x^{5}\log\left(f\right)^{2}-10\,bf^{a}x^{3}\log\left(f\right)+15\,f^{a}x\right)f^{bx^{2}}}{8\,b^{3}\log\left(f\right)^{3}}-\frac{15\,\sqrt{\pi}f^{a}\operatorname{erf}\left(\sqrt{-b\log\left(f\right)}x\right)}{16\,\sqrt{-b\log\left(f\right)}b^{3}\log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^6,x, algorithm="maxima")
```

```
[Out] 1/8*(4*b^2*f^a*x^5*log(f)^2 - 10*b*f^a*x^3*log(f) + 15*f^a*x)*f^(
b*x^2)/(b^3*log(f)^3) - 15/16*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x)
/(sqrt(-b*log(f))*b^3*log(f)^3)
```

Fricas [A] time = 0.251412, size = 104, normalized size = 0.99

$$\frac{2\left(4\,b^{2}x^{5}\log\left(f\right)^{2}-10\,bx^{3}\log\left(f\right)+15\,x\right)\sqrt{-b\log\left(f\right)}f^{bx^{2}+a}-15\,\sqrt{\pi}f^{a}\operatorname{erf}\left(\sqrt{-b\log\left(f\right)}x\right)}{16\,\sqrt{-b\log\left(f\right)}b^{3}\log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^6,x, algorithm="fricas")
```

```
[Out] 1/16*(2*(4*b^2*x^5*log(f)^2 - 10*b*x^3*log(f) + 15*x)*sqrt(-b*log
(f))*f^(b*x^2 + a) - 15*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x))/(sqr
t(-b*log(f))*b^3*log(f)^3)
```

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

$$\int f^{a+bx^{2}}x^{6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**6,x)
```

```
[Out] Integral(f**(a + b*x**2)*x**6, x)
```

GIAC/XCAS [A] time = 0.232396, size = 111, normalized size = 1.06

$$\frac{\left(4\,b^{2}x^{5}\ln\left(f\right)^{2}-10\,bx^{3}\ln\left(f\right)+15\,x\right)e^{\left(bx^{2}\ln\left(f\right)+a\ln\left(f\right)\right)}}{8\,b^{3}\ln\left(f\right)^{3}}+\frac{15\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(f\right)}x\right)e^{\left(a\ln\left(f\right)\right)}}{16\,\sqrt{-b\ln\left(f\right)}b^{3}\ln\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^6,x, algorithm="giac")
```

```
[Out] 1/8*(4*b^2*x^5*ln(f)^2 - 10*b*x^3*ln(f) + 15*x)*e^(b*x^2*ln(f) +
a*ln(f))/(b^3*ln(f)^3) + 15/16*sqrt(pi)*erf(-sqrt(-b*ln(f))*x)*e^
(a*ln(f))/(sqrt(-b*ln(f))*b^3*ln(f)^3)
```

3.86 $\int f^{a+bx^2}x^4\,dx$

Optimal. Leaf size=82

$$\frac{3\sqrt{\pi}f^a\mathrm{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{8b^{5/2}\log^{\frac{5}{2}}(f)}-\frac{3xf^{a+bx^2}}{4b^2\log^2(f)}+\frac{x^3f^{a+bx^2}}{2b\log(f)}$$

```
[Out] (3*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(8*b^(5/2)*Log[f]^(
5/2)) - (3*f^(a + b*x^2)*x)/(4*b^2*Log[f]^2) + (f^(a + b*x^2)*x^3
)/(2*b*Log[f])
```

Rubi [A] time = 0.104729, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{3\sqrt{\pi}f^a\mathrm{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{8b^{5/2}\log^{\frac{5}{2}}(f)}-\frac{3xf^{a+bx^2}}{4b^2\log^2(f)}+\frac{x^3f^{a+bx^2}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^2)*x^4,x]
```

```
[Out] (3*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(8*b^(5/2)*Log[f]^(
5/2)) - (3*f^(a + b*x^2)*x)/(4*b^2*Log[f]^2) + (f^(a + b*x^2)*x^3
)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 10.6073, size = 78, normalized size = 0.95

$$\frac{f^{a+bx^2}x^3}{2b\log(f)}-\frac{3f^{a+bx^2}x}{4b^2\log(f)^2}+\frac{3\sqrt{\pi}f^a\,\mathrm{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{8b^{\frac{5}{2}}\log(f)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**2+a)*x**4,x)
```

```
[Out] f**(a + b*x**2)*x**3/(2*b*log(f)) - 3*f**(a + b*x**2)*x/(4*b**2*l
og(f)**2) + 3*sqrt(pi)*f**a*erfi(sqrt(b)*x*sqrt(log(f)))/(8*b**(5
/2)*log(f)**(5/2))
```

Mathematica [A] time = 0.0432054, size = 71, normalized size = 0.87

$$\frac{f^a\left(3\sqrt{\pi}\mathrm{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)+2\sqrt{b}x\sqrt{\log(f)}f^{bx^2}\left(2bx^2\log(f)-3\right)\right)}{8b^{5/2}\log^{\frac{5}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^2)*x^4,x]
```

```
[Out] (f^a*(3*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]] + 2*Sqrt[b]*f^(b*x^
2)*x*Sqrt[Log[f]]*(-3 + 2*b*x^2*Log[f])))/(8*b^(5/2)*Log[f]^(5/2)
)
```

Maple [A] time = 0.03, size = 76, normalized size = 0.9

$$\frac{f^{a}x^{3}f^{b x^{2}}}{2 b \ln(f)}-\frac{3 f^{a}x f^{b x^{2}}}{4 (\ln(f))^{2} b^{2}}+\frac{3 f^{a}\sqrt{\pi}}{8 (\ln(f))^{2} b^{2}}Erf\left(\sqrt{-b \ln(f)}x\right)\frac{1}{\sqrt{-b \ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(b*x^2+a)*x^4,x)
```

```
[Out] 1/2*f^a/ln(f)/b*x^3*f^(b*x^2)-3/4*f^a/ln(f)^2/b^2*x*f^(b*x^2)+3/8
*f^a/ln(f)^2/b^2*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x
)
```

Maxima [A] time = 0.781303, size = 90, normalized size = 1.1

$$\frac{\left(2 b f^{a}x^{3}\log(f)-3 f^{a}x\right)f^{b x^{2}}}{4 b^{2}\log(f)^{2}}+\frac{3 \sqrt{\pi}f^{a}\operatorname{erf}\left(\sqrt{-b \log(f)}x\right)}{8 \sqrt{-b \log(f)}b^{2}\log(f)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)*x^4,x, algorithm="maxima")
```

```
[Out] 1/4*(2*b*f^a*x^3*log(f) - 3*f^a*x)*f^(b*x^2)/(b^2*log(f)^2) + 3/8
*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x)/(sqrt(-b*log(f))*b^2*log(f)^
2)
```

Fricas [A] time = 0.281965, size = 88, normalized size = 1.07

$$\frac{2\left(2 b x^{3}\log(f)-3 x\right)\sqrt{-b \log(f)}f^{b x^{2}+a}+3 \sqrt{\pi}f^{a}\operatorname{erf}\left(\sqrt{-b \log(f)}x\right)}{8 \sqrt{-b \log(f)}b^{2}\log(f)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^2 + a)*x^4,x, algorithm="fricas")
```

```
[Out] 1/8*(2*(2*b*x^3*log(f) - 3*x)*sqrt(-b*log(f))*f^(b*x^2 + a) + 3*s
qrt(pi)*f^a*erf(sqrt(-b*log(f))*x))/(sqrt(-b*log(f))*b^2*log(f)^2
)
```

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

$$\int f^{a+b x^{2}}x^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(b*x**2+a)*x**4,x)
```

```
[Out] Integral(f**(a + b*x**2)*x**4, x)
```

GIAC/XCAS [A] time = 0.251377, size = 95, normalized size = 1.16

$$\frac{\left(2\, bx^{3}\ln\left(f\right) - 3\, x\right)e^{\left(bx^{2}\ln\left(f\right) + a\ln\left(f\right)\right)}}{4\, b^{2}\ln\left(f\right)^{2}} - \frac{3\, \sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(f\right)}x\right)e^{\left(a\ln\left(f\right)\right)}}{8\, \sqrt{-b\ln\left(f\right)}b^{2}\ln\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^4,x, algorithm="giac")
```

```
[Out] 1/4*(2*b*x^3*ln(f) - 3*x)*e^(b*x^2*ln(f) + a*ln(f))/(b^2*ln(f)^2)
 - 3/8*sqrt(pi)*erf(-sqrt(-b*ln(f))*x)*e^(a*ln(f))/(sqrt(-b*ln(f)
)*b^2*ln(f)^2)
```

3.87 $\int f^{a+bx^2} x^2 \, dx$

Optimal. Leaf size=59

$$\frac{xf^{a+bx^2}}{2b\log(f)} - \frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{4b^{3/2}\log^{\frac{3}{2}}(f)}$$

```
[Out] -(f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(4*b^(3/2)*Log[f]^(3
/2)) + (f^(a + b*x^2)*x)/(2*b*Log[f])
```

Rubi [A] time = 0.0596599, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{xf^{a+bx^2}}{2b\log(f)} - \frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{4b^{3/2}\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)*x^2,x]
```

```
[Out] -(f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(4*b^(3/2)*Log[f]^(3
/2)) + (f^(a + b*x^2)*x)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 5.88825, size = 53, normalized size = 0.9

$$\frac{f^{a+bx^2}x}{2b\log(f)} - \frac{\sqrt{\pi}f^a\operatorname{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{4b^{\frac{3}{2}}\log(f)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)*x**2,x)
```

```
[Out] f**(a + b*x**2)*x/(2*b*log(f)) - sqrt(pi)*f**a*erfi(sqrt(b)*x*sqr
t(log(f)))/(4*b**(3/2)*log(f)**(3/2))
```

Mathematica [A] time = 0.0338619, size = 59, normalized size = 1.

$$\frac{xf^{a+bx^2}}{2b\log(f)} - \frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{4b^{3/2}\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)*x^2,x]
```

```
[Out] -(f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(4*b^(3/2)*Log[f]^(3
/2)) + (f^(a + b*x^2)*x)/(2*b*Log[f])
```

Maple [A] time = 0.026, size = 54, normalized size = 0.9

$$\frac{f^a x f^{bx^2}}{2\,b\ln(f)} - \frac{f^a\sqrt{\pi}}{4\,b\ln(f)} Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)*x^2,x)
```

```
[Out] 1/2*f^a/ln(f)/b*x*f^(b*x^2)-1/4*f^a/ln(f)/b*Pi^(1/2)/(-b*ln(f))^(
1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.767152, size = 72, normalized size = 1.22

$$\frac{f^{bx^2}f^a x}{2\,b\log(f)} - \frac{\sqrt{\pi}f^a\,\mathrm{erf}\left(\sqrt{-b\log(f)}x\right)}{4\,\sqrt{-b\log(f)}b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^2,x, algorithm="maxima")
```

```
[Out] 1/2*f^(b*x^2)*f^a*x/(b*log(f)) - 1/4*sqrt(pi)*f^a*erf(sqrt(-b*log
(f))*x)/(sqrt(-b*log(f))*b*log(f))
```

Fricas [A] time = 0.276644, size = 73, normalized size = 1.24

$$\frac{2\,\sqrt{-b\log(f)}f^{bx^2+a}x - \sqrt{\pi}f^a\,\mathrm{erf}\left(\sqrt{-b\log(f)}x\right)}{4\,\sqrt{-b\log(f)}b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*sqrt(-b*log(f))*f^(b*x^2 + a)*x - sqrt(pi)*f^a*erf(sqrt(-b
*log(f))*x))/(sqrt(-b*log(f))*b*log(f))
```

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

$$\int f^{a+bx^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)*x**2,x)
```

```
[Out] Integral(f**(a + b*x**2)*x**2, x)
```

GIAC/XCAS [A] time = 0.229807, size = 80, normalized size = 1.36

$$\frac{xe^{\left(bx^2\ln(f)+a\ln(f)\right)}}{2\,b\ln(f)} + \frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln(f)}x\right)\,e^{\left(a\ln(f)\right)}}{4\,\sqrt{-b\ln(f)}b\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)*x^2,x, algorithm="giac")
```

```
[Out] 1/2*x*e^(b*x^2*ln(f) + a*ln(f))/(b*ln(f)) + 1/4*sqrt(pi)*erf(-sqr
t(-b*ln(f))*x)*e^(a*ln(f))/(sqrt(-b*ln(f))*b*ln(f))
```

3.88 $\int f^{a+bx^2}\,dx$

Optimal. Leaf size=37

$$\frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

```
[Out] (f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(2*Sqrt[b]*Sqrt[Log[f
]])
```

Rubi [A] time = 0.0182608, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^2),x]
```

```
[Out] (f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(2*Sqrt[b]*Sqrt[Log[f
]])
```

Rubi in Sympy [A] time = 2.03141, size = 36, normalized size = 0.97

$$\frac{\sqrt{\pi}f^a\operatorname{erfi}\left(\sqrt{b}x\sqrt{\log{(f)}}\right)}{2\sqrt{b}\sqrt{\log{(f)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**2+a),x)
```

```
[Out] sqrt(pi)*f**a*erfi(sqrt(b)*x*sqrt(log(f)))/(2*sqrt(b)*sqrt(log(f)
))
```

Mathematica [A] time = 0.00635998, size = 37, normalized size = 1.

$$\frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^2),x]
```

```
[Out] (f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]])/(2*Sqrt[b]*Sqrt[Log[f
]])
```

Maple [A] time = 0.019, size = 26, normalized size = 0.7

$$\frac{\sqrt{\pi}f^a}{2}Erf\left(\sqrt{-b\ln{(f)}}x\right)\frac{1}{\sqrt{-b\ln{(f)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a),x)
```

```
[Out] 1/2*f^a*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.778535, size = 34, normalized size = 0.92

$$\frac{\sqrt{\pi} f^a \operatorname{erf}\left(\sqrt{-b \log(f)} x\right)}{2 \sqrt{-b \log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x)/sqrt(-b*log(f))
```

Fricas [A] time = 0.251391, size = 34, normalized size = 0.92

$$\frac{\sqrt{\pi} f^a \operatorname{erf}\left(\sqrt{-b \log(f)} x\right)}{2 \sqrt{-b \log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x)/sqrt(-b*log(f))
```

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

$$\int f^{a+bx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a),x)
```

```
[Out] Integral(f**(a + b*x**2), x)
```

GIAC/XCAS [A] time = 0.249239, size = 38, normalized size = 1.03

$$-\frac{\sqrt{\pi} \operatorname{erf}\left(-\sqrt{-b\ln(f)} x\right) e^{(a\ln(f))}}{2 \sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(f))*x)*e^(a*ln(f))/sqrt(-b*ln(f))
```

3.89 $\int \frac{f^{a+bx^2}}{x^2}\,dx$

Optimal. Leaf size=49

$$\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{f^{a+bx^2}}{x}$$

```
[Out] -(f^(a + b*x^2)/x) + Sqrt[b]*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log
[f]]]*Sqrt[Log[f]]
```

Rubi [A] time = 0.0574331, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{f^{a+bx^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^2,x]
```

```
[Out] -(f^(a + b*x^2)/x) + Sqrt[b]*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log
[f]]]*Sqrt[Log[f]]
```

Rubi in Sympy [A] time = 5.25911, size = 44, normalized size = 0.9

$$\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\operatorname{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{f^{a+bx^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**2,x)
```

```
[Out] sqrt(pi)*sqrt(b)*f**a*sqrt(log(f))*erfi(sqrt(b)*x*sqrt(log(f))) -
 f**(a + b*x**2)/x
```

Mathematica [A] time = 0.0234826, size = 49, normalized size = 1.

$$\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{f^{a+bx^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^2,x]
```

```
[Out] -(f^(a + b*x^2)/x) + Sqrt[b]*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log
[f]]]*Sqrt[Log[f]]
```

Maple [A] time = 0.026, size = 44, normalized size = 0.9

$$-\frac{f^a f^{bx^2}}{x}+f^a\ln(f)\,b\sqrt{\pi}Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^2,x)
```

```
[Out] -f^a*f^(b*x^2)/x+f^a*ln(f)*b*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln
(f))^(1/2)*x)
```

Maxima [A] time = 0.82241, size = 38, normalized size = 0.78

$$-\frac{\sqrt{-bx^2\log(f)}f^a\,\Gamma\left(-\frac{1}{2}, -bx^2\log(f)\right)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^2,x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(-b*x^2*log(f))*f^a*gamma(-1/2, -b*x^2*log(f))/x
```

Fricas [A] time = 0.257619, size = 69, normalized size = 1.41

$$\frac{\sqrt{\pi}bf^ax\,\mathrm{erf}\left(\sqrt{-b\log(f)}x\right)\log(f) - \sqrt{-b\log(f)}f^{bx^2+a}}{\sqrt{-b\log(f)}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^2,x, algorithm="fricas")
```

```
[Out] (sqrt(pi)*b*f^a*x*erf(sqrt(-b*log(f))*x)*log(f) - sqrt(-b*log(f))
*f^(b*x^2 + a))/(sqrt(-b*log(f))*x)
```

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

$$\int \frac{f^{a+bx^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**2,x)
```

```
[Out] Integral(f**(a + b*x**2)/x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^2,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^2, x)
```

3.90 $\int \frac{f^{a+bx^2}}{x^4} \, dx$

Optimal. Leaf size=73

$$\frac{2}{3}\sqrt{\pi}b^{3/2}f^a\log^{\frac{3}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{2b\log(f)f^{a+bx^2}}{3x}-\frac{f^{a+bx^2}}{3x^3}$$

```
[Out] -f^(a + b*x^2)/(3*x^3) - (2*b*f^(a + b*x^2)*Log[f])/(3*x) + (2*b^
(3/2)*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^(3/2))/3
```

Rubi [A] time = 0.0964346, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2}{3}\sqrt{\pi}b^{3/2}f^a\log^{\frac{3}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{2b\log(f)f^{a+bx^2}}{3x}-\frac{f^{a+bx^2}}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^4,x]
```

```
[Out] -f^(a + b*x^2)/(3*x^3) - (2*b*f^(a + b*x^2)*Log[f])/(3*x) + (2*b^
(3/2)*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^(3/2))/3
```

Rubi in Sympy [A] time = 8.60068, size = 70, normalized size = 0.96

$$\frac{2\sqrt{\pi}b^{\frac{3}{2}}f^a\log(f)^{\frac{3}{2}}\operatorname{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{3}-\frac{2bf^{a+bx^2}\log(f)}{3x}-\frac{f^{a+bx^2}}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**4,x)
```

```
[Out] 2*sqrt(pi)*b**(3/2)*f**a*log(f)**(3/2)*erfi(sqrt(b)*x*sqrt(log(f)
))/3 - 2*b*f**(a + b*x**2)*log(f)/(3*x) - f**(a + b*x**2)/(3*x**3
)
```

Mathematica [A] time = 0.0660829, size = 62, normalized size = 0.85

$$\frac{1}{3}f^a\left(2\sqrt{\pi}b^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{f^{bx^2}\left(2bx^2\log(f)+1\right)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^4,x]
```

```
[Out] (f^a*(2*b^(3/2)*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^(3/2
) - (f^(b*x^2)*(1 + 2*b*x^2*Log[f]))/x^3))/3
```

Maple [A] time = 0.035, size = 67, normalized size = 0.9

$$-\frac{f^af^{bx^2}}{3x^3}-\frac{2f^a\ln(f)bf^{bx^2}}{3x}+\frac{2f^a(\ln(f))^2b^2\sqrt{\pi}}{3}Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^4,x)
```

```
[Out] -1/3*f^a*f^(b*x^2)/x^3-2/3*f^a*ln(f)*b*f^(b*x^2)/x+2/3*f^a*ln(f)^
2*b^2*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.820189, size = 38, normalized size = 0.52

$$-\frac{\left(-bx^2\log\left(f\right)\right)^{\frac{3}{2}}f^a\,\Gamma\left(-\frac{3}{2},-bx^2\log\left(f\right)\right)}{2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(-b*x^2*log(f))^(3/2)*f^a*gamma(-3/2, -b*x^2*log(f))/x^3
```

Fricas [A] time = 0.262697, size = 93, normalized size = 1.27

$$\frac{2\sqrt{\pi}b^2f^ax^3\operatorname{erf}\left(\sqrt{-b\log\left(f\right)}x\right)\log\left(f\right)^2-\left(2\,bx^2\log\left(f\right)+1\right)\sqrt{-b\log\left(f\right)}f^{bx^2+a}}{3\sqrt{-b\log\left(f\right)}x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(2*sqrt(pi)*b^2*f^a*x^3*erf(sqrt(-b*log(f))*x)*log(f)^2 - (2*
b*x^2*log(f) + 1)*sqrt(-b*log(f))*f^(b*x^2 + a))/(sqrt(-b*log(f))
*x^3)
```

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

$$\int\frac{f^{a+bx^2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**4,x)
```

```
[Out] Integral(f**(a + b*x**2)/x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{bx^2+a}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(b*x^2 + a)/x^4, x)
```

3.91 $\int \frac{f^{a+bx^2}}{x^6}\,dx$

Optimal. Leaf size=96

$$\frac{4}{15}\sqrt{\pi}b^{5/2}f^a\log^{\frac{5}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{4b^2\log^2(f)f^{a+bx^2}}{15x}-\frac{f^{a+bx^2}}{5x^5}-\frac{2b\log(f)f^{a+bx^2}}{15x^3}$$

```
[Out] -f^(a + b*x^2)/(5*x^5) - (2*b*f^(a + b*x^2)*Log[f])/(15*x^3) - (4
*b^2*f^(a + b*x^2)*Log[f]^2)/(15*x) + (4*b^(5/2)*f^a*Sqrt[Pi]*Erf
i[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^(5/2))/15
```

Rubi [A] time = 0.141117, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{4}{15}\sqrt{\pi}b^{5/2}f^a\log^{\frac{5}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{4b^2\log^2(f)f^{a+bx^2}}{15x}-\frac{f^{a+bx^2}}{5x^5}-\frac{2b\log(f)f^{a+bx^2}}{15x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^6,x]
```

```
[Out] -f^(a + b*x^2)/(5*x^5) - (2*b*f^(a + b*x^2)*Log[f])/(15*x^3) - (4
*b^2*f^(a + b*x^2)*Log[f]^2)/(15*x) + (4*b^(5/2)*f^a*Sqrt[Pi]*Erf
i[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^(5/2))/15
```

Rubi in Sympy [A] time = 12.6844, size = 94, normalized size = 0.98

$$\frac{4\sqrt{\pi}b^{\frac{5}{2}}f^a\log(f)^{\frac{5}{2}}\operatorname{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{15}-\frac{4b^2f^{a+bx^2}\log(f)^2}{15x}-\frac{2bf^{a+bx^2}\log(f)}{15x^3}-\frac{f^{a+bx^2}}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**6,x)
```

```
[Out] 4*sqrt(pi)*b**(5/2)*f**a*log(f)**(5/2)*erfi(sqrt(b)*x*sqrt(log(f)
))/15 - 4*b**2*f**(a + b*x**2)*log(f)**2/(15*x) - 2*b*f**(a + b*x
**2)*log(f)/(15*x**3) - f**(a + b*x**2)/(5*x**5)
```

Mathematica [A] time = 0.0543651, size = 77, normalized size = 0.8

$$\frac{f^a\left(4\sqrt{\pi}b^{5/2}x^5\log^{\frac{5}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-f^{bx^2}\left(4b^2x^4\log^2(f)+2bx^2\log(f)+3\right)\right)}{15x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^6,x]
```

```
[Out] (f^a*(4*b^(5/2)*Sqrt[Pi]*x^5*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^
(5/2) - f^(b*x^2)*(3 + 2*b*x^2*Log[f] + 4*b^2*x^4*Log[f]^2)))/(15
*x^5)
```

Maple [A] time = 0.039, size = 89, normalized size = 0.9

$$-\frac{f^{a} f^{b x^{2}}}{5 x^{5}}-\frac{2 f^{a} \ln (f) b f^{b x^{2}}}{15 x^{3}}-\frac{4 f^{a} (\ln (f))^{2} b^{2} f^{b x^{2}}}{15 x}+\frac{4 f^{a} (\ln (f))^{3} b^{3} \sqrt{\pi}}{15} Erf\left(\sqrt{-b \ln (f)}x\right) \frac{1}{\sqrt{-b \ln (f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^6,x)
```

```
[Out] -1/5*f^a*f^(b*x^2)/x^5-2/15*f^a*ln(f)*b*f^(b*x^2)/x^3-4/15*f^a*ln
(f)^2*b^2*f^(b*x^2)/x+4/15*f^a*ln(f)^3*b^3*Pi^(1/2)/(-b*ln(f))^(1
/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.849291, size = 38, normalized size = 0.4

$$-\frac{\left(-b x^{2} \log (f)\right)^{\frac{5}{2}} f^{a} \Gamma\left(-\frac{5}{2},-b x^{2} \log (f)\right)}{2 x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^6,x, algorithm="maxima")
```

```
[Out] -1/2*(-b*x^2*log(f))^(5/2)*f^a*gamma(-5/2, -b*x^2*log(f))/x^5
```

Fricas [A] time = 0.257553, size = 109, normalized size = 1.14

$$\frac{4 \sqrt{\pi} b^{3} f^{a} x^{5} \operatorname{erf}\left(\sqrt{-b \log (f)} x\right) \log (f)^{3}-\left(4 b^{2} x^{4} \log (f)^{2}+2 b x^{2} \log (f)+3\right) \sqrt{-b \log (f)} f^{b x^{2}+a}}{15 \sqrt{-b \log (f)} x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^6,x, algorithm="fricas")
```

```
[Out] 1/15*(4*sqrt(pi)*b^3*f^a*x^5*erf(sqrt(-b*log(f))*x)*log(f)^3 - (4
*b^2*x^4*log(f)^2 + 2*b*x^2*log(f) + 3)*sqrt(-b*log(f))*f^(b*x^2
+ a))/(sqrt(-b*log(f))*x^5)
```

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

$$\int \frac{f^{a+b x^{2}}}{x^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**6,x)
```

```
[Out] Integral(f**(a + b*x**2)/x**6, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{b x^{2}+a}}{x^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^6,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^6, x)
```

3.92 $\int \frac{f^{a+bx^2}}{x^8}\,dx$

Optimal. Leaf size=119

$$\frac{8}{105}\sqrt{\pi}b^{7/2}f^a\log^{\frac{7}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{8b^3\log^3(f)f^{a+bx^2}}{105x}-\frac{4b^2\log^2(f)f^{a+bx^2}}{105x^3}-\frac{f^{a+bx^2}}{7x^7}-\frac{2b\log(f)f^{a+bx^2}}{35x^5}$$

```
[Out] -f^(a + b*x^2)/(7*x^7) - (2*b*f^(a + b*x^2)*Log[f])/(35*x^5) - (4
*b^2*f^(a + b*x^2)*Log[f]^2)/(105*x^3) - (8*b^3*f^(a + b*x^2)*Log
[f]^3)/(105*x) + (8*b^(7/2)*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[
f]]]*Log[f]^(7/2))/105
```

Rubi [A] time = 0.184293, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{8}{105}\sqrt{\pi}b^{7/2}f^a\log^{\frac{7}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-\frac{8b^3\log^3(f)f^{a+bx^2}}{105x}-\frac{4b^2\log^2(f)f^{a+bx^2}}{105x^3}-\frac{f^{a+bx^2}}{7x^7}-\frac{2b\log(f)f^{a+bx^2}}{35x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^8,x]
```

```
[Out] -f^(a + b*x^2)/(7*x^7) - (2*b*f^(a + b*x^2)*Log[f])/(35*x^5) - (4
*b^2*f^(a + b*x^2)*Log[f]^2)/(105*x^3) - (8*b^3*f^(a + b*x^2)*Log
[f]^3)/(105*x) + (8*b^(7/2)*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x*Sqrt[Log[
f]]]*Log[f]^(7/2))/105
```

Rubi in Sympy [A] time = 17.6152, size = 117, normalized size = 0.98

$$\frac{8\sqrt{\pi}b^{\frac{7}{2}}f^a\log(f)^{\frac{7}{2}}\operatorname{erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)}{105}-\frac{8b^3f^{a+bx^2}\log(f)^3}{105x}-\frac{4b^2f^{a+bx^2}\log(f)^2}{105x^3}-\frac{2bf^{a+bx^2}\log(f)}{35x^5}-\frac{f^{a+bx^2}}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**8,x)
```

```
[Out] 8*sqrt(pi)*b**(7/2)*f**a*log(f)**(7/2)*erfi(sqrt(b)*x*sqrt(log(f)
))/105 - 8*b**3*f**(a + b*x**2)*log(f)**3/(105*x) - 4*b**2*f**(a
+ b*x**2)*log(f)**2/(105*x**3) - 2*b*f**(a + b*x**2)*log(f)/(35*x
**5) - f**(a + b*x**2)/(7*x**7)
```

Mathematica [A] time = 0.0644529, size = 89, normalized size = 0.75

$$\frac{f^a\left(8\sqrt{\pi}b^{7/2}x^7\log^{\frac{7}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-f^{bx^2}\left(8b^3x^6\log^3(f)+4b^2x^4\log^2(f)+6bx^2\log(f)+15\right)\right)}{105x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^8,x]
```

```
[Out] (f^a*(8*b^(7/2)*Sqrt[Pi]*x^7*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]^
(7/2) - f^(b*x^2)*(15 + 6*b*x^2*Log[f] + 4*b^2*x^4*Log[f]^2 + 8*b
^3*x^6*Log[f]^3)))/(105*x^7)
```

Maple [A] time = 0.047, size = 111, normalized size = 0.9

$$-\frac{f^{a}f^{bx^{2}}}{7x^{7}}-\frac{2f^{a}\ln(f)bf^{bx^{2}}}{35x^{5}}-\frac{4f^{a}(\ln(f))^{2}b^{2}f^{bx^{2}}}{105x^{3}}-\frac{8f^{a}(\ln(f))^{3}b^{3}f^{bx^{2}}}{105x}+\frac{8f^{a}(\ln(f))^{4}b^{4}\sqrt{\pi}}{105}Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^8,x)
```

```
[Out] -1/7*f^a*f^(b*x^2)/x^7-2/35*f^a*ln(f)*b*f^(b*x^2)/x^5-4/105*f^a*l
n(f)^2*b^2*f^(b*x^2)/x^3-8/105*f^a*ln(f)^3*b^3*f^(b*x^2)/x+8/105*
f^a*ln(f)^4*b^4*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.822647, size = 38, normalized size = 0.32

$$-\frac{\left(-bx^{2}\log(f)\right)^{\frac{7}{2}}f^{a}\left(-\frac{7}{2},-bx^{2}\log(f)\right)}{2x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^8,x, algorithm="maxima")
```

```
[Out] -1/2*(-b*x^2*log(f))^(7/2)*f^a*gamma(-7/2, -b*x^2*log(f))/x^7
```

Fricas [A] time = 0.26897, size = 126, normalized size = 1.06

$$\frac{8\sqrt{\pi}b^{4}f^{a}x^{7}\operatorname{erf}\left(\sqrt{-b\log(f)}x\right)\log(f)^{4}-\left(8b^{3}x^{6}\log(f)^{3}+4b^{2}x^{4}\log(f)^{2}+6bx^{2}\log(f)+15\right)\sqrt{-b\log(f)}f^{bx^{2}+a}}{105\sqrt{-b\log(f)}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^8,x, algorithm="fricas")
```

```
[Out] 1/105*(8*sqrt(pi)*b^4*f^a*x^7*erf(sqrt(-b*log(f))*x)*log(f)^4 - (
8*b^3*x^6*log(f)^3 + 4*b^2*x^4*log(f)^2 + 6*b*x^2*log(f) + 15)*sq
rt(-b*log(f))*f^(b*x^2 + a))/(sqrt(-b*log(f))*x^7)
```

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

$$\int\frac{f^{a+bx^{2}}}{x^{8}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**8,x)
```

```
[Out] Integral(f**(a + b*x**2)/x**8, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^8,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^8, x)
```

3.93 $\int \frac{f^{a+bx^2}}{x^{10}} \, dx$

Optimal. Leaf size=34

$$-\frac{f^a \left(-bx^2 \log(f)\right)^{9/2} \text{Gamma}\left(-\frac{9}{2}, -bx^2 \log(f)\right)}{2x^9}$$

```
[Out] -(f^a*Gamma[-9/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]))^(9/2))/(2*x^
9)
```

Rubi [A] time = 0.0367308, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a \left(-bx^2 \log(f)\right)^{9/2} \text{Gamma}\left(-\frac{9}{2}, -bx^2 \log(f)\right)}{2x^9}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^10,x]
```

```
[Out] -(f^a*Gamma[-9/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]))^(9/2))/(2*x^
9)
```

Rubi in Sympy [A] time = 3.30615, size = 37, normalized size = 1.09

$$-\frac{f^a \left(-bx^2 \log(f)\right)^{\frac{9}{2}} \left(-\frac{9}{2}, -bx^2 \log(f)\right)}{2x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**10,x)
```

```
[Out] -f**a*(-b*x**2*log(f))**(9/2)*Gamma(-9/2, -b*x**2*log(f))/(2*x**9
)
```

Mathematica [B] time = 0.0759422, size = 101, normalized size = 2.97

$$\frac{f^a \left(16\sqrt{\pi} b^{9/2} x^9 \log^{\frac{9}{2}}(f) \text{Erfi}\left(\sqrt{b} x \sqrt{\log(f)}\right) - f^{bx^2} \left(16b^4x^8 \log^4(f) + 8b^3x^6 \log^3(f) + 12b^2x^4 \log^2(f) + 30bx^2 \log(f) + 105\right)\right)}{945x^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^10,x]
```

```
[Out] (f^a*(16*b^(9/2)*Sqrt[Pi]*x^9*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[f]
^(9/2) - f^(b*x^2)*(105 + 30*b*x^2*Log[f] + 12*b^2*x^4*Log[f]^2 +
 8*b^3*x^6*Log[f]^3 + 16*b^4*x^8*Log[f]^4)))/(945*x^9)
```

Maple [A] time = 0.054, size = 133, normalized size = 3.9

$$-\frac{f^{a} f^{b x^{2}}}{9 x^{9}}-\frac{2 f^{a} \ln(f) b f^{b x^{2}}}{63 x^{7}}-\frac{4 f^{a} (\ln(f))^{2} b^{2} f^{b x^{2}}}{315 x^{5}}-\frac{8 f^{a} (\ln(f))^{3} b^{3} f^{b x^{2}}}{945 x^{3}} -\frac{16 f^{a} (\ln(f))^{4} b^{4} f^{b x^{2}}}{945 x}+\frac{16 f^{a} (\ln(f))^{5} b^{5} \sqrt{\pi}}{945} Erf\left(\sqrt{-b \ln(f)}x\right)\frac{1}{\sqrt{-b \ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^10,x)
```

```
[Out] -1/9*f^a*f^(b*x^2)/x^9-2/63*f^a*ln(f)*b*f^(b*x^2)/x^7-4/315*f^a*l
n(f)^2*b^2*f^(b*x^2)/x^5-8/945*f^a*ln(f)^3*b^3*f^(b*x^2)/x^3-16/9
45*f^a*ln(f)^4*b^4*f^(b*x^2)/x+16/945*f^a*ln(f)^5*b^5*Pi^(1/2)/(-
b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.828958, size = 38, normalized size = 1.12

$$-\frac{\left(-b x^{2} \log(f)\right)^{\frac{9}{2}} f^{a} \left(-\frac{9}{2}, -b x^{2} \log(f)\right)}{2 x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^10,x, algorithm="maxima")
```

```
[Out] -1/2*(-b*x^2*log(f))^(9/2)*f^a*gamma(-9/2, -b*x^2*log(f))/x^9
```

Fricas [A] time = 0.252089, size = 142, normalized size = 4.18

$$\frac{16 \sqrt{\pi} b^{5} f^{a} x^{9} \operatorname{erf}\left(\sqrt{-b \log(f)} x\right) \log(f)^{5}-\left(16 b^{4} x^{8} \log(f)^{4}+8 b^{3} x^{6} \log(f)^{3}+12 b^{2} x^{4} \log(f)^{2}+30 b x^{2} \log(f)+105\right) \sqrt{-}}{945 \sqrt{-b \log(f)} x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^10,x, algorithm="fricas")
```

```
[Out] 1/945*(16*sqrt(pi)*b^5*f^a*x^9*erf(sqrt(-b*log(f))*x)*log(f)^5 -
(16*b^4*x^8*log(f)^4 + 8*b^3*x^6*log(f)^3 + 12*b^2*x^4*log(f)^2 +
 30*b*x^2*log(f) + 105)*sqrt(-b*log(f))*f^(b*x^2 + a))/(sqrt(-b*l
og(f))*x^9)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^10,x, algorithm="giac")

[Out] integrate(f^(b*x^2 + a)/x^10, x)
```

3.94 $\int \frac{f^{a+bx^2}}{x^{12}}\,dx$

Optimal. Leaf size=34

$$-\frac{f^a\left(-bx^2\log(f)\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-bx^2\log(f)\right)}{2x^{11}}$$

```
[Out] -(f^a*Gamma[-11/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]))^(11/2))/(2*
x^11)
```

Rubi [A] time = 0.0369363, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^a\left(-bx^2\log(f)\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-bx^2\log(f)\right)}{2x^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^2)/x^12,x]
```

```
[Out] -(f^a*Gamma[-11/2, -(b*x^2*Log[f])]*(-(b*x^2*Log[f]))^(11/2))/(2*
x^11)
```

Rubi in Sympy [A] time = 3.3021, size = 37, normalized size = 1.09

$$-\frac{f^a\left(-bx^2\log(f)\right)^{\frac{11}{2}}\left(-\frac{11}{2},-bx^2\log(f)\right)}{2x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**2+a)/x**12,x)
```

```
[Out] -f**a*(-b*x**2*log(f))**(11/2)*Gamma(-11/2, -b*x**2*log(f))/(2*x*
*11)
```

Mathematica [B] time = 0.0858847, size = 113, normalized size = 3.32

$$\frac{f^a\left(32\sqrt{\pi}b^{11/2}x^{11}\log^{\frac{11}{2}}(f)\text{Erfi}\left(\sqrt{b}x\sqrt{\log(f)}\right)-f^{bx^2}\left(32b^5x^{10}\log^5(f)+16b^4x^8\log^4(f)+24b^3x^6\log^3(f)+60b^2x^4\log^2(f)\right.\right.}{10395x^{11}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^2)/x^12,x]
```

```
[Out] (f^a*(32*b^(11/2)*Sqrt[Pi]*x^11*Erfi[Sqrt[b]*x*Sqrt[Log[f]]]*Log[
f]^(11/2) - f^(b*x^2)*(945 + 210*b*x^2*Log[f] + 60*b^2*x^4*Log[f]
^2 + 24*b^3*x^6*Log[f]^3 + 16*b^4*x^8*Log[f]^4 + 32*b^5*x^10*Log[
f]^5)))/(10395*x^11)
```

Maple [A] time = 0.063, size = 155, normalized size = 4.6

$$-\frac{f^a f^{bx^2}}{11\,x^{11}}-\frac{2\,f^a\ln(f)\,b f^{bx^2}}{99\,x^9}-\frac{4\,f^a(\ln(f))^2\,b^2 f^{bx^2}}{693\,x^7}-\frac{8\,f^a(\ln(f))^3\,b^3 f^{bx^2}}{3465\,x^5}-\frac{16\,f^a(\ln(f))^4\,b^4 f^{bx^2}}{10395\,x^3}-\frac{32\,f^a(\ln(f))^5\,b^5 f^{bx^2}}{10395\,x}+\frac{32\,f^a(\ln(f))^6\,b^6\sqrt{\pi}}{10395}Erf\left(\sqrt{-b\ln(f)}x\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^2+a)/x^12,x)
```

```
[Out] -1/11*f^a*f^(b*x^2)/x^11-2/99*f^a*ln(f)*b*f^(b*x^2)/x^9-4/693*f^a
*ln(f)^2*b^2*f^(b*x^2)/x^7-8/3465*f^a*ln(f)^3*b^3*f^(b*x^2)/x^5-1
6/10395*f^a*ln(f)^4*b^4*f^(b*x^2)/x^3-32/10395*f^a*ln(f)^5*b^5*f^
(b*x^2)/x+32/10395*f^a*ln(f)^6*b^6*Pi^(1/2)/(-b*ln(f))^(1/2)*erf(
(-b*ln(f))^(1/2)*x)
```

Maxima [A] time = 0.915837, size = 38, normalized size = 1.12

$$-\frac{\left(-bx^2\log(f)\right)^{\frac{11}{2}}f^a\,\Gamma\left(-\frac{11}{2},-bx^2\log(f)\right)}{2\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^12,x, algorithm="maxima")
```

```
[Out] -1/2*(-b*x^2*log(f))^(11/2)*f^a*gamma(-11/2, -b*x^2*log(f))/x^11
```

Fricas [A] time = 0.261056, size = 158, normalized size = 4.65

$$\frac{32\sqrt{\pi}b^6 f^a x^{11}\,\mathrm{erf}\left(\sqrt{-b\log(f)}x\right)\log(f)^6-\left(32\,b^5x^{10}\log(f)^5+16\,b^4x^8\log(f)^4+24\,b^3x^6\log(f)^3+60\,b^2x^4\log(f)^2+210\cdots\right.}{10395\sqrt{-b\log(f)}x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^12,x, algorithm="fricas")
```

```
[Out] 1/10395*(32*sqrt(pi)*b^6*f^a*x^11*erf(sqrt(-b*log(f))*x)*log(f)^6
 - (32*b^5*x^10*log(f)^5 + 16*b^4*x^8*log(f)^4 + 24*b^3*x^6*log(f
)^3 + 60*b^2*x^4*log(f)^2 + 210*b*x^2*log(f) + 945)*sqrt(-b*log(f
))*f^(b*x^2 + a))/(sqrt(-b*log(f))*x^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**2+a)/x**12,x)
```

```
[Out] Timed out
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^2+a}}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^2 + a)/x^12,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^2 + a)/x^12, x)
```

3.95 $\int f^{a+bx^3} x^m \, dx$

Optimal. Leaf size=46

$$-\frac{1}{3} f^a x^{m+1} \left(-bx^3 \log(f)\right)^{\frac{1}{3}(-m-1)} \text{Gamma}\left(\frac{m+1}{3}, -bx^3 \log(f)\right)$$

```
[Out] -(f^a*x^(1 + m)*Gamma[(1 + m)/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]
))^((-1 - m)/3))/3
```

Rubi [A] time = 0.0395809, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{1}{3} f^a x^{m+1} \left(-bx^3 \log(f)\right)^{\frac{1}{3}(-m-1)} \text{Gamma}\left(\frac{m+1}{3}, -bx^3 \log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^m,x]
```

```
[Out] -(f^a*x^(1 + m)*Gamma[(1 + m)/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]
))^((-1 - m)/3))/3
```

Rubi in Sympy [A] time = 3.51595, size = 46, normalized size = 1.

$$-\frac{f^a x^{m+1} \left(-bx^3 \log(f)\right)^{-\frac{m}{3}-\frac{1}{3}} \left(\frac{m}{3}+\frac{1}{3}, -bx^3 \log(f)\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**m,x)
```

```
[Out] -f**a*x**(m + 1)*(-b*x**3*log(f))**(-m/3 - 1/3)*Gamma(m/3 + 1/3,
-b*x**3*log(f))/3
```

Mathematica [A] time = 0.0261186, size = 46, normalized size = 1.

$$-\frac{1}{3} f^a x^{m+1} \left(-bx^3 \log(f)\right)^{\frac{1}{3}(-m-1)} \text{Gamma}\left(\frac{m+1}{3}, -bx^3 \log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^m,x]
```

```
[Out] -(f^a*x^(1 + m)*Gamma[(1 + m)/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]
))^((-1 - m)/3))/3
```

Maple [B] time = 0.048, size = 140, normalized size = 3.

$$\frac{f^a}{3} (-b)^{-\frac{m}{3}-\frac{1}{3}} (\ln(f))^{-\frac{m}{3}-\frac{1}{3}} \left(3 \frac{x^{1+m} (-b)^{1/3+m/3} (\ln(f))^{1/3+m/3} (1/3+m/3) \left(-bx^3 \ln(f)\right)^{-m/3-1/3} (1/3+m/3)}{1+m} + 3 \frac{x^{1+m} (-b}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^m,x)
```

```
[Out] 1/3*f^a*(-b)^(-1/3*m-1/3)*ln(f)^(-1/3*m-1/3)*(3/(1+m)*x^(1+m)*(-b
)^(1/3+1/3*m)*ln(f)^(1/3+1/3*m)*(1/3+1/3*m)*(-b*x^3*ln(f))^(-1/3*
m-1/3)*GAMMA(1/3+1/3*m)+3/(1+m)*x^(1+m)*(-b)^(1/3+1/3*m)*ln(f)^(1
/3+1/3*m)*(-1/3*m-1/3)*(-b*x^3*ln(f))^(-1/3*m-1/3)*GAMMA(1/3+1/3*
m,-b*x^3*ln(f)))
```

Maxima [A] time = 0.883615, size = 51, normalized size = 1.11

$$-\frac{1}{3}\left(-bx^3\log\left(f\right)\right)^{-\frac{1}{3}m-\frac{1}{3}}f^a x^{m+1}\left(\frac{1}{3}m+\frac{1}{3}, -bx^3\log\left(f\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^m,x, algorithm="maxima")
```

```
[Out] -1/3*(-b*x^3*log(f))^(-1/3*m - 1/3)*f^a*x^(m + 1)*gamma(1/3*m + 1
/3, -b*x^3*log(f))
```

Fricas [A] time = 0.259945, size = 54, normalized size = 1.17

$$\frac{e^{\left(-\frac{1}{3}(m-2)\log(-b\log(f))+a\log(f)\right)}\left(\frac{1}{3}m+\frac{1}{3}, -bx^3\log\left(f\right)\right)}{3\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^m,x, algorithm="fricas")
```

```
[Out] 1/3*e^(-1/3*(m - 2)*log(-b*log(f)) + a*log(f))*gamma(1/3*m + 1/3,
 -b*x^3*log(f))/(b*log(f))
```

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

$$\int f^{a+bx^3}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**m,x)
```

```
[Out] Integral(f**(a + b*x**3)*x**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^3+a}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)*x^m, x)
```

3.96 $\int f^{a+bx^3} x^{17}\, dx$

Optimal. Leaf size=24

$$-\frac{f^a \text{Gamma}\left(6,-b x^3 \log (f)\right)}{3 b^6 \log ^6(f)}$$

```
[Out] -(f^a*Gamma[6, -(b*x^3*Log[f])])/(3*b^6*Log[f]^6)
```

Rubi [A] time = 0.0391765, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a \text{Gamma}\left(6,-b x^3 \log (f)\right)}{3 b^6 \log ^6(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^3)*x^17,x]

[Out] -(f^a*Gamma[6, -(b*x^3*Log[f])])/(3*b^6*Log[f]^6)
```

Rubi in Sympy [A] time = 3.79757, size = 26, normalized size = 1.08

$$-\frac{f^{a}\left(6,-b x^{3} \log \left(f\right)\right)}{3 b^{6} \log \left(f\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**3+a)*x**17,x)

[Out] -f**a*Gamma(6, -b*x**3*log(f))/(3*b**6*log(f)**6)
```

Mathematica [B] time = 0.0206319, size = 77, normalized size = 3.21

$$\frac{f^{a+b x^3} \left(b^5 x^{15} \log ^5(f)-5 b^4 x^{12} \log ^4(f)+20 b^3 x^9 \log ^3(f)-60 b^2 x^6 \log ^2(f)+120 b x^3 \log (f)-120\right)}{3 b^6 \log ^6(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^3)*x^17,x]

[Out] (f^(a + b*x^3)*(-120 + 120*b*x^3*Log[f] - 60*b^2*x^6*Log[f]^2 + 2
0*b^3*x^9*Log[f]^3 - 5*b^4*x^12*Log[f]^4 + b^5*x^15*Log[f]^5))/(3
*b^6*Log[f]^6)
```

Maple [A] time = 0.019, size = 76, normalized size = 3.2

$$\frac{\left(b^{5} x^{15} \left(\ln \left(f\right)\right)^{5}-5\,b^{4} x^{12} \left(\ln \left(f\right)\right)^{4}+20\,b^{3} x^{9} \left(\ln \left(f\right)\right)^{3}-60\,b^{2} x^{6} \left(\ln \left(f\right)\right)^{2}+120\,b x^{3} \ln \left(f\right)-120\right) f^{b x^{3}+a}}{3\,\left(\ln \left(f\right)\right)^{6} b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^17,x)
```

```
[Out] 1/3*(b^5*x^15*ln(f)^5-5*b^4*x^12*ln(f)^4+20*b^3*x^9*ln(f)^3-60*b^
2*x^6*ln(f)^2+120*b*x^3*ln(f)-120)*f^(b*x^3+a)/ln(f)^6/b^6
```

Maxima [A] time = 0.798626, size = 124, normalized size = 5.17

$$\frac{\left(b^5 f^a x^{15} \log\left(f\right)^5 - 5\, b^4 f^a x^{12} \log\left(f\right)^4 + 20\, b^3 f^a x^9 \log\left(f\right)^3 - 60\, b^2 f^a x^6 \log\left(f\right)^2 + 120\, b f^a x^3 \log\left(f\right) - 120\, f^a\right) f^{b x^3}}{3\, b^6 \log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^17,x, algorithm="maxima")
```

```
[Out] 1/3*(b^5*f^a*x^15*log(f)^5 - 5*b^4*f^a*x^12*log(f)^4 + 20*b^3*f^a
*x^9*log(f)^3 - 60*b^2*f^a*x^6*log(f)^2 + 120*b*f^a*x^3*log(f) -
120*f^a)*f^(b*x^3)/(b^6*log(f)^6)
```

Fricas [A] time = 0.269105, size = 101, normalized size = 4.21

$$\frac{\left(b^5 x^{15} \log\left(f\right)^5 - 5\, b^4 x^{12} \log\left(f\right)^4 + 20\, b^3 x^9 \log\left(f\right)^3 - 60\, b^2 x^6 \log\left(f\right)^2 + 120\, b x^3 \log\left(f\right) - 120\right) f^{b x^3 + a}}{3\, b^6 \log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^17,x, algorithm="fricas")
```

```
[Out] 1/3*(b^5*x^15*log(f)^5 - 5*b^4*x^12*log(f)^4 + 20*b^3*x^9*log(f)^
3 - 60*b^2*x^6*log(f)^2 + 120*b*x^3*log(f) - 120)*f^(b*x^3 + a)/(
b^6*log(f)^6)
```

Sympy [A] time = 0.337413, size = 95, normalized size = 3.96

$$\begin{cases} \frac{f^{a+b x^3} \left(b^5 x^{15} \log\left(f\right)^5 - 5 b^4 x^{12} \log\left(f\right)^4 + 20 b^3 x^9 \log\left(f\right)^3 - 60 b^2 x^6 \log\left(f\right)^2 + 120 b x^3 \log\left(f\right) - 120\right)}{3 b^6 \log\left(f\right)^6} & \text{for}\: 3 b^6 \log\left(f\right)^6 \neq 0 \\ \frac{x^{18}}{18} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**17,x)
```

```
[Out] Piecewise((f**(a + b*x**3)*(b**5*x**15*log(f)**5 - 5*b**4*x**12*l
og(f)**4 + 20*b**3*x**9*log(f)**3 - 60*b**2*x**6*log(f)**2 + 120*
b*x**3*log(f) - 120)/(3*b**6*log(f)**6), Ne(3*b**6*log(f)**6, 0))
, (x**18/18, True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^17,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.97 $\int f^{a+bx^3} x^{14} \, dx$

Optimal. Leaf size=24

$$\frac{f^a \text{Gamma}\left(5,-bx^3 \log(f)\right)}{3b^5 \log^5(f)}$$

```
[Out] (f^a*Gamma[5, -(b*x^3*Log[f])])/(3*b^5*Log[f]^5)
```

Rubi [A] time = 0.0392418, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a \text{Gamma}\left(5,-bx^3 \log(f)\right)}{3b^5 \log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^14,x]

[Out] (f^a*Gamma[5, -(b*x^3*Log[f])])/(3*b^5*Log[f]^5)
```

Rubi in Sympy [A] time = 3.78091, size = 24, normalized size = 1.

$$\frac{f^a \left(5,-bx^3 \log(f)\right)}{3b^5 \log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**14,x)

[Out] f**a*Gamma(5, -b*x**3*log(f))/(3*b**5*log(f)**5)
```

Mathematica [B] time = 0.0183968, size = 65, normalized size = 2.71

$$\frac{f^{a+bx^3}\left(b^4x^{12}\log^4(f)-4b^3x^9\log^3(f)+12b^2x^6\log^2(f)-24bx^3\log(f)+24\right)}{3b^5\log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^14,x]

[Out] (f^(a + b*x^3)*(24 - 24*b*x^3*Log[f] + 12*b^2*x^6*Log[f]^2 - 4*b^
3*x^9*Log[f]^3 + b^4*x^12*Log[f]^4))/(3*b^5*Log[f]^5)
```

Maple [A] time = 0.016, size = 64, normalized size = 2.7

$$\frac{\left(b^4x^{12}(\ln(f))^4-4\,b^3x^9(\ln(f))^3+12\,b^2x^6(\ln(f))^2-24\,bx^3\ln(f)+24\right)f^{bx^3+a}}{3\,(\ln(f))^5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^14,x)
```

```
[Out] 1/3*(b^4*x^12*ln(f)^4-4*b^3*x^9*ln(f)^3+12*b^2*x^6*ln(f)^2-24*b*x
^3*ln(f)+24)*f^(b*x^3+a)/ln(f)^5/b^5
```

Maxima [A] time = 0.80098, size = 104, normalized size = 4.33

$$\frac{\left(b^4 f^a x^{12} \log\left(f\right)^4 - 4\, b^3 f^a x^9 \log\left(f\right)^3 + 12\, b^2 f^a x^6 \log\left(f\right)^2 - 24\, b f^a x^3 \log\left(f\right) + 24\, f^a\right) f^{b x^3}}{3\, b^5 \log\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^14,x, algorithm="maxima")
```

```
[Out] 1/3*(b^4*f^a*x^12*log(f)^4 - 4*b^3*f^a*x^9*log(f)^3 + 12*b^2*f^a*
x^6*log(f)^2 - 24*b*f^a*x^3*log(f) + 24*f^a)*f^(b*x^3)/(b^5*log(f
)^5)
```

Fricas [A] time = 0.253028, size = 85, normalized size = 3.54

$$\frac{\left(b^4 x^{12} \log\left(f\right)^4 - 4\, b^3 x^9 \log\left(f\right)^3 + 12\, b^2 x^6 \log\left(f\right)^2 - 24\, b x^3 \log\left(f\right) + 24\right) f^{b x^3 + a}}{3\, b^5 \log\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^14,x, algorithm="fricas")
```

```
[Out] 1/3*(b^4*x^12*log(f)^4 - 4*b^3*x^9*log(f)^3 + 12*b^2*x^6*log(f)^2
 - 24*b*x^3*log(f) + 24)*f^(b*x^3 + a)/(b^5*log(f)^5)
```

Sympy [A] time = 0.309708, size = 82, normalized size = 3.42

$$\begin{cases} \frac{f^{a+bx^3}\left(b^4x^{12}\log\left(f\right)^4 - 4b^3x^9\log\left(f\right)^3 + 12b^2x^6\log\left(f\right)^2 - 24bx^3\log\left(f\right) + 24\right)}{3b^5\log\left(f\right)^5} & \text{for}\ 3b^5\log\left(f\right)^5 \neq 0 \\ \frac{x^{15}}{15} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**14,x)
```

```
[Out] Piecewise((f**(a + b*x**3)*(b**4*x**12*log(f)**4 - 4*b**3*x**9*lo
g(f)**3 + 12*b**2*x**6*log(f)**2 - 24*b*x**3*log(f) + 24)/(3*b**5
*log(f)**5), Ne(3*b**5*log(f)**5, 0)), (x**15/15, True))
```

GIAC/XCAS [A] time = 0.239167, size = 162, normalized size = 6.75

$$\frac{b^4 x^{12} e^{\left(b x^3 \ln\left(f\right) + a \ln\left(f\right)\right)} \ln\left(f\right)^4 - 4\, b^3 x^9 e^{\left(b x^3 \ln\left(f\right) + a \ln\left(f\right)\right)} \ln\left(f\right)^3 + 12\, b^2 x^6 e^{\left(b x^3 \ln\left(f\right) + a \ln\left(f\right)\right)} \ln\left(f\right)^2 - 24\, b x^3 e^{\left(b x^3 \ln\left(f\right) + a \ln\left(f\right)\right)} \ln\left(f\right) +}{3\, b^5 \ln\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^14,x, algorithm="giac")
```

```
[Out] 1/3*(b^4*x^12*e^(b*x^3*ln(f) + a*ln(f))*ln(f)^4 - 4*b^3*x^9*e^(b*
x^3*ln(f) + a*ln(f))*ln(f)^3 + 12*b^2*x^6*e^(b*x^3*ln(f) + a*ln(f
))*ln(f)^2 - 24*b*x^3*e^(b*x^3*ln(f) + a*ln(f))*ln(f) + 24*e^(b*x
^3*ln(f) + a*ln(f)))/(b^5*ln(f)^5)
```

3.98 $\int f^{a+bx^3} x^{11} \, dx$

Optimal. Leaf size=84

$$-\frac{2f^{a+bx^3}}{b^4\log^4(f)}+\frac{2x^3f^{a+bx^3}}{b^3\log^3(f)}-\frac{x^6f^{a+bx^3}}{b^2\log^2(f)}+\frac{x^9f^{a+bx^3}}{3b\log(f)}$$

```
[Out] (-2*f^(a + b*x^3))/(b^4*Log[f]^4) + (2*f^(a + b*x^3)*x^3)/(b^3*Lo
g[f]^3) - (f^(a + b*x^3)*x^6)/(b^2*Log[f]^2) + (f^(a + b*x^3)*x^9
)/(3*b*Log[f])
```

Rubi [A] time = 0.154276, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2f^{a+bx^3}}{b^4\log^4(f)}+\frac{2x^3f^{a+bx^3}}{b^3\log^3(f)}-\frac{x^6f^{a+bx^3}}{b^2\log^2(f)}+\frac{x^9f^{a+bx^3}}{3b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^11,x]
```

```
[Out] (-2*f^(a + b*x^3))/(b^4*Log[f]^4) + (2*f^(a + b*x^3)*x^3)/(b^3*Lo
g[f]^3) - (f^(a + b*x^3)*x^6)/(b^2*Log[f]^2) + (f^(a + b*x^3)*x^9
)/(3*b*Log[f])
```

Rubi in Sympy [A] time = 16.0034, size = 78, normalized size = 0.93

$$\frac{f^{a+bx^3}x^9}{3b\log(f)}-\frac{f^{a+bx^3}x^6}{b^2\log(f)^2}+\frac{2f^{a+bx^3}x^3}{b^3\log(f)^3}-\frac{2f^{a+bx^3}}{b^4\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**11,x)
```

```
[Out] f**(a + b*x**3)*x**9/(3*b*log(f)) - f**(a + b*x**3)*x**6/(b**2*lo
g(f)**2) + 2*f**(a + b*x**3)*x**3/(b**3*log(f)**3) - 2*f**(a + b*
x**3)/(b**4*log(f)**4)
```

Mathematica [A] time = 0.0157771, size = 53, normalized size = 0.63

$$\frac{f^{a+bx^3}\left(b^3x^9\log^3(f)-3b^2x^6\log^2(f)+6bx^3\log(f)-6\right)}{3b^4\log^4(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^11,x]
```

```
[Out] (f^(a + b*x^3)*(-6 + 6*b*x^3*Log[f] - 3*b^2*x^6*Log[f]^2 + b^3*x^
9*Log[f]^3))/(3*b^4*Log[f]^4)
```

Maple [A] time = 0.014, size = 52, normalized size = 0.6

$$\frac{\left(b^{3} x^{9} \left(\ln \left(f\right)\right)^{3}-3\, b^{2} x^{6} \left(\ln \left(f\right)\right)^{2}+6\, b\,x^{3} \ln \left(f\right)-6\right) f^{b\,x^{3}+a}}{3\, \left(\ln \left(f\right)\right)^{4} b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^11,x)
```

```
[Out] 1/3*(b^3*x^9*ln(f)^3-3*b^2*x^6*ln(f)^2+6*b*x^3*ln(f)-6)*f^(b*x^3+
a)/ln(f)^4/b^4
```

Maxima [A] time = 0.972793, size = 84, normalized size = 1.

$$\frac{\left(b^{3} f^{a} x^{9} \log\left(f\right)^{3} - 3\, b^{2} f^{a} x^{6} \log\left(f\right)^{2} + 6\, b f^{a} x^{3} \log\left(f\right) - 6\, f^{a}\right) f^{b x^{3}}}{3\, b^{4} \log\left(f\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^11,x, algorithm="maxima")
```

```
[Out] 1/3*(b^3*f^a*x^9*log(f)^3 - 3*b^2*f^a*x^6*log(f)^2 + 6*b*f^a*x^3*
log(f) - 6*f^a)*f^(b*x^3)/(b^4*log(f)^4)
```

Fricas [A] time = 0.271136, size = 69, normalized size = 0.82

$$\frac{\left(b^{3} x^{9} \log\left(f\right)^{3} - 3\, b^{2} x^{6} \log\left(f\right)^{2} + 6\, b x^{3} \log\left(f\right) - 6\right) f^{b x^{3} + a}}{3\, b^{4} \log\left(f\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^11,x, algorithm="fricas")
```

```
[Out] 1/3*(b^3*x^9*log(f)^3 - 3*b^2*x^6*log(f)^2 + 6*b*x^3*log(f) - 6)*
f^(b*x^3 + a)/(b^4*log(f)^4)
```

Sympy [A] time = 0.285147, size = 68, normalized size = 0.81

$$\begin{cases} \frac{f^{a + b x^{3}} \left(b^{3} x^{9} \log{\left(f \right)}^{3} - 3 b^{2} x^{6} \log{\left(f \right)}^{2} + 6 b x^{3} \log{\left(f \right)} - 6\right)}{3 b^{4} \log{\left(f \right)}^{4}} & \text{for}\: 3 b^{4} \log{\left(f \right)}^{4} \neq 0 \\\frac{x^{12}}{12} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**11,x)
```

```
[Out] Piecewise((f**(a + b*x**3)*(b**3*x**9*log(f)**3 - 3*b**2*x**6*log
(f)**2 + 6*b*x**3*log(f) - 6)/(3*b**4*log(f)**4), Ne(3*b**4*log(f
)**4, 0)), (x**12/12, True))
```

GIAC/XCAS [A] time = 0.232021, size = 128, normalized size = 1.52

$$\frac{b^3x^9e^{\left(bx^3\ln(f)+a\ln(f)\right)}\ln\left(f\right)^3 - 3\,b^2x^6e^{\left(bx^3\ln(f)+a\ln(f)\right)}\ln\left(f\right)^2 + 6\,bx^3e^{\left(bx^3\ln(f)+a\ln(f)\right)}\ln\left(f\right) - 6\,e^{\left(bx^3\ln(f)+a\ln(f)\right)}}{3\,b^4\ln\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^11,x, algorithm="giac")
```

```
[Out] 1/3*(b^3*x^9*e^(b*x^3*ln(f) + a*ln(f))*ln(f)^3 - 3*b^2*x^6*e^(b*x
^3*ln(f) + a*ln(f))*ln(f)^2 + 6*b*x^3*e^(b*x^3*ln(f) + a*ln(f))*l
n(f) - 6*e^(b*x^3*ln(f) + a*ln(f)))/(b^4*ln(f)^4)
```

3.99 $\int f^{a+bx^3} x^8 \, dx$

Optimal. Leaf size=67

$$\frac{2f^{a+bx^3}}{3b^3\log^3(f)} - \frac{2x^3 f^{a+bx^3}}{3b^2\log^2(f)} + \frac{x^6 f^{a+bx^3}}{3b\log(f)}$$

```
[Out] (2*f^(a + b*x^3))/(3*b^3*Log[f]^3) - (2*f^(a + b*x^3)*x^3)/(3*b^2
*Log[f]^2) + (f^(a + b*x^3)*x^6)/(3*b*Log[f])
```

Rubi [A] time = 0.113017, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2f^{a+bx^3}}{3b^3\log^3(f)} - \frac{2x^3 f^{a+bx^3}}{3b^2\log^2(f)} + \frac{x^6 f^{a+bx^3}}{3b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^8,x]
```

```
[Out] (2*f^(a + b*x^3))/(3*b^3*Log[f]^3) - (2*f^(a + b*x^3)*x^3)/(3*b^2
*Log[f]^2) + (f^(a + b*x^3)*x^6)/(3*b*Log[f])
```

Rubi in Sympy [A] time = 11.2899, size = 61, normalized size = 0.91

$$\frac{f^{a+bx^3}x^6}{3b\log(f)} - \frac{2f^{a+bx^3}x^3}{3b^2\log(f)^2} + \frac{2f^{a+bx^3}}{3b^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**8,x)
```

```
[Out] f**(a + b*x**3)*x**6/(3*b*log(f)) - 2*f**(a + b*x**3)*x**3/(3*b**
2*log(f)**2) + 2*f**(a + b*x**3)/(3*b**3*log(f)**3)
```

Mathematica [A] time = 0.014325, size = 41, normalized size = 0.61

$$\frac{f^{a+bx^3}\left(b^2x^6\log^2(f) - 2bx^3\log(f) + 2\right)}{3b^3\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^8,x]
```

```
[Out] (f^(a + b*x^3)*(2 - 2*b*x^3*Log[f] + b^2*x^6*Log[f]^2))/(3*b^3*Lo
g[f]^3)
```

Maple [A] time = 0.011, size = 40, normalized size = 0.6

$$\frac{\left(b^2x^6(\ln(f))^2 - 2bx^3\ln(f) + 2\right)f^{bx^3+a}}{3(\ln(f))^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^8,x)
```

```
[Out] 1/3*(b^2*x^6*ln(f)^2-2*b*x^3*ln(f)+2)*f^(b*x^3+a)/ln(f)^3/b^3
```

Maxima [A] time = 0.789732, size = 63, normalized size = 0.94

$$\frac{\left(b^2 f^a x^6 \log\left(f\right)^2 - 2\, b f^a x^3 \log\left(f\right) + 2\, f^a\right) f^{b x^3}}{3\, b^3 \log\left(f\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^8,x, algorithm="maxima")
```

```
[Out] 1/3*(b^2*f^a*x^6*log(f)^2 - 2*b*f^a*x^3*log(f) + 2*f^a)*f^(b*x^3)
/(b^3*log(f)^3)
```

Fricas [A] time = 0.280164, size = 53, normalized size = 0.79

$$\frac{\left(b^2 x^6 \log\left(f\right)^2 - 2\, b x^3 \log\left(f\right) + 2\right) f^{b x^3 + a}}{3\, b^3 \log\left(f\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^8,x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*x^6*log(f)^2 - 2*b*x^3*log(f) + 2)*f^(b*x^3 + a)/(b^3*lo
g(f)^3)
```

Sympy [A] time = 0.253558, size = 54, normalized size = 0.81

$$\begin{cases} \frac{f^{a + b x^3} \left(b^2 x^6 \log\left(f\right)^2 - 2 b x^3 \log\left(f\right) + 2\right)}{3 b^3 \log\left(f\right)^3} & \text{for}\: 3 b^3 \log\left(f\right)^3 \neq 0 \\ \frac{x^9}{9} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**8,x)
```

```
[Out] Piecewise((f**(a + b*x**3)*(b**2*x**6*log(f)**2 - 2*b*x**3*log(f)
 + 2)/(3*b**3*log(f)**3), Ne(3*b**3*log(f)**3, 0)), (x**9/9, True
))
```

GIAC/XCAS [A] time = 0.229489, size = 95, normalized size = 1.42

$$\frac{b^2 x^6 e^{\left(b x^3 \ln(f) + a \ln(f)\right)} \ln\left(f\right)^2 - 2\, b x^3 e^{\left(b x^3 \ln(f) + a \ln(f)\right)} \ln\left(f\right) + 2\, e^{\left(b x^3 \ln(f) + a \ln(f)\right)}}{3\, b^3 \ln\left(f\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^8,x, algorithm="giac")
```

```
[Out] 1/3*(b^2*x^6*e^(b*x^3*ln(f) + a*ln(f))*ln(f)^2 - 2*b*x^3*e^(b*x^3
*ln(f) + a*ln(f))*ln(f) + 2*e^(b*x^3*ln(f) + a*ln(f)))/(b^3*ln(f)
^3)
```

3.100 $\int f^{a+bx^3} x^5 \, dx$

Optimal. Leaf size=44

$$\frac{x^3 f^{a+bx^3}}{3b\log(f)} - \frac{f^{a+bx^3}}{3b^2\log^2(f)}$$

```
[Out] -f^(a + b*x^3)/(3*b^2*Log[f]^2) + (f^(a + b*x^3)*x^3)/(3*b*Log[f]
)
```

Rubi [A] time = 0.0739836, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{x^3 f^{a+bx^3}}{3b\log(f)} - \frac{f^{a+bx^3}}{3b^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^5,x]
```

```
[Out] -f^(a + b*x^3)/(3*b^2*Log[f]^2) + (f^(a + b*x^3)*x^3)/(3*b*Log[f]
)
```

Rubi in Sympy [A] time = 6.54497, size = 36, normalized size = 0.82

$$\frac{f^{a+bx^3} x^3}{3b\log(f)} - \frac{f^{a+bx^3}}{3b^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**5,x)
```

```
[Out] f**(a + b*x**3)*x**3/(3*b*log(f)) - f**(a + b*x**3)/(3*b**2*log(f
)**2)
```

Mathematica [A] time = 0.0108529, size = 29, normalized size = 0.66

$$\frac{f^{a+bx^3}\left(bx^3\log(f)-1\right)}{3b^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^5,x]
```

```
[Out] (f^(a + b*x^3)*(-1 + b*x^3*Log[f]))/(3*b^2*Log[f]^2)
```

Maple [A] time = 0.007, size = 28, normalized size = 0.6

$$\frac{\left(bx^3\ln(f)-1\right)f^{bx^3+a}}{3\left(\ln(f)\right)^2 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^5,x)
```

```
[Out] 1/3*(b*x^3*ln(f)-1)*f^(b*x^3+a)/ln(f)^2/b^2
```

Maxima [A] time = 0.829769, size = 43, normalized size = 0.98

$$\frac{\left(bf^{a}x^{3}\log\left(f\right)-f^{a}\right)f^{bx^{3}}}{3\,b^{2}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^5,x, algorithm="maxima")
```

```
[Out] 1/3*(b*f^a*x^3*log(f) - f^a)*f^(b*x^3)/(b^2*log(f)^2)
```

Fricas [A] time = 0.317973, size = 36, normalized size = 0.82

$$\frac{\left(bx^{3}\log\left(f\right)-1\right)f^{bx^{3}+a}}{3\,b^{2}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^5,x, algorithm="fricas")
```

```
[Out] 1/3*(b*x^3*log(f) - 1)*f^(b*x^3 + a)/(b^2*log(f)^2)
```

Sympy [A] time = 0.220419, size = 41, normalized size = 0.93

$$\begin{cases}\frac{f^{a+bx^{3}}\left(bx^{3}\log\left(f\right)-1\right)}{3b^{2}\log\left(f\right)^{2}} & \text{for}\: 3b^{2}\log\left(f\right)^{2}\neq 0\\ \frac{x^{6}}{6} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**5,x)
```

```
[Out] Piecewise((f**(a + b*x**3)*(b*x**3*log(f) - 1)/(3*b**2*log(f)**2)
, Ne(3*b**2*log(f)**2, 0)), (x**6/6, True))
```

GIAC/XCAS [A] time = 0.259642, size = 932, normalized size = 21.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^5,x, algorithm="giac")
```

```
[Out] 1/3*(2*((b*x^3*ln(abs(f)) - 1)*(pi^2*b^2*sign(f) - pi^2*b^2 + 2*b
^2*ln(abs(f))^2)/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))
```

```
^2)^2 + 4*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2) + (p
i*b*x^3*sign(f) - pi*b*x^3)*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*l
n(abs(f)))/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2)^2
+ 4*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2))*cos(-1/2*
pi*b*x^3*sign(f) + 1/2*pi*b*x^3 - 1/2*pi*a*sign(f) + 1/2*pi*a) +
((pi*b*x^3*sign(f) - pi*b*x^3)*(pi^2*b^2*sign(f) - pi^2*b^2 + 2*b
^2*ln(abs(f))^2)/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))
^2)^2 + 4*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2) - 4*
(b*x^3*ln(abs(f)) - 1)*(pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs
(f)))/((pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2)^2 + 4*(
pi*b^2*ln(abs(f))*sign(f) - pi*b^2*ln(abs(f)))^2))*sin(-1/2*pi*b*
x^3*sign(f) + 1/2*pi*b*x^3 - 1/2*pi*a*sign(f) + 1/2*pi*a))*e^(b*x
^3*ln(abs(f)) + a*ln(abs(f))) - 1/6*((2*b*i*x^3*ln(abs(f)) - pi*b
*x^3*sign(f) + pi*b*x^3 - 2*i)*e^(1/2*(pi*b*x^3*(sign(f) - 1) + p
i*a*(sign(f) - 1))*i)/(2*pi*b^2*i*ln(abs(f))*sign(f) - 2*pi*b^2*i
*ln(abs(f)) + pi^2*b^2*sign(f) - pi^2*b^2 + 2*b^2*ln(abs(f))^2) +
 (2*b*i*x^3*ln(abs(f)) + pi*b*x^3*sign(f) - pi*b*x^3 - 2*i)*e^(-1
/2*(pi*b*x^3*(sign(f) - 1) + pi*a*(sign(f) - 1))*i)/(2*pi*b^2*i*l
n(abs(f))*sign(f) - 2*pi*b^2*i*ln(abs(f)) - pi^2*b^2*sign(f) + pi
^2*b^2 - 2*b^2*ln(abs(f))^2))*e^(b*x^3*ln(abs(f)) + a*ln(abs(f)))
/i
```

3.101 $\int f^{a+bx^3} x^2 \, dx$

Optimal. Leaf size=20

$$\frac{f^{a+bx^3}}{3b\log(f)}$$

```
[Out] f^(a + b*x^3)/(3*b*Log[f])
```

Rubi [A] time = 0.0357309, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^{a+bx^3}}{3b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^2,x]

[Out] f^(a + b*x^3)/(3*b*Log[f])
```

Rubi in Sympy [A] time = 3.46217, size = 14, normalized size = 0.7

$$\frac{f^{a+bx^3}}{3b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**2,x)

[Out] f**(a + b*x**3)/(3*b*log(f))
```

Mathematica [A] time = 0.00502405, size = 20, normalized size = 1.

$$\frac{f^{a+bx^3}}{3b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^2,x]

[Out] f^(a + b*x^3)/(3*b*Log[f])
```

Maple [A] time = 0.004, size = 19, normalized size = 1.

$$\frac{f^{bx^3+a}}{3\,b\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^2,x)
```

```
[Out] 1/3*f^(b*x^3+a)/b/ln(f)
```

Maxima [A] time = 0.813683, size = 24, normalized size = 1.2

$$\frac{f^{bx^3+a}}{3\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^2,x, algorithm="maxima")
```

```
[Out] 1/3*f^(b*x^3 + a)/(b*log(f))
```

Fricas [A] time = 0.308497, size = 24, normalized size = 1.2

$$\frac{f^{bx^3+a}}{3\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/3*f^(b*x^3 + a)/(b*log(f))
```

Sympy [A] time = 0.19023, size = 24, normalized size = 1.2

$$\begin{cases} \frac{f^{a+bx^3}}{3b\log\left(f\right)} & \text{for}\: 3b\log\left(f\right) \neq 0 \\ \frac{x^3}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**2,x)
```

```
[Out] Piecewise((f**(a + b*x**3)/(3*b*log(f)), Ne(3*b*log(f), 0)), (x**
3/3, True))
```

GIAC/XCAS [A] time = 0.223749, size = 24, normalized size = 1.2

$$\frac{f^{bx^3+a}}{3\,b\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^2,x, algorithm="giac")
```

```
[Out] 1/3*f^(b*x^3 + a)/(b*ln(f))
```

3.102 $\int \frac{f^{a+bx^3}}{x} \, dx$

Optimal. Leaf size=15

$$\frac{1}{3}f^a\text{ExpIntegralEi}\left(bx^3\log(f)\right)$$

```
[Out] (f^a*ExpIntegralEi[b*x^3*Log[f]])/3
```

Rubi [A] time = 0.0344289, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{3}f^a\text{ExpIntegralEi}\left(bx^3\log(f)\right)$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^3)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^3*Log[f]])/3
```

Rubi in Sympy [A] time = 3.05968, size = 14, normalized size = 0.93

$$\frac{f^a\operatorname{Ei}\left(bx^3\log\left(f\right)\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(b*x**3+a)/x,x)

[Out] f**a*Ei(b*x**3*log(f))/3
```

Mathematica [A] time = 0.0045556, size = 15, normalized size = 1.

$$\frac{1}{3}f^a\text{ExpIntegralEi}\left(bx^3\log(f)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^3)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^3*Log[f]])/3
```

Maple [B] time = 0.022, size = 41, normalized size = 2.7

$$\frac{f^a\left(3\,\ln\left(x\right)+\ln\left(-b\right)+\ln\left(\ln\left(f\right)\right)-\ln\left(-bx^3\ln\left(f\right)\right)-Ei\left(1,-bx^3\ln\left(f\right)\right)\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(b*x^3+a)/x,x)
```

```
[Out] 1/3*f^a*(3*ln(x)+ln(-b)+ln(ln(f))-ln(-b*x^3*ln(f))-Ei(1,-b*x^3*ln
(f)))
```

Maxima [A] time = 0.958367, size = 18, normalized size = 1.2

$$\frac{1}{3}f^a\text{Ei}\left(bx^3\log(f)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(b*x^3 + a)/x,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*Ei(b*x^3*log(f))
```

Fricas [A] time = 0.269873, size = 18, normalized size = 1.2

$$\frac{1}{3}f^a\text{Ei}\left(bx^3\log(f)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(b*x^3 + a)/x,x, algorithm="fricas")
```

```
[Out] 1/3*f^a*Ei(b*x^3*log(f))
```

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

$$\int\frac{f^{a+bx^3}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f**(b*x**3+a)/x,x)
```

```
[Out] Integral(f**(a + b*x**3)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{bx^3+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(b*x^3 + a)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x, x)
```

3.103 $\int \frac{f^{a+bx^3}}{x^4}\,dx$

Optimal. Leaf size=35

$$\frac{1}{3}bf^a\log(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{f^{a+bx^3}}{3x^3}$$

```
[Out] -f^(a + b*x^3)/(3*x^3) + (b*f^a*ExpIntegralEi[b*x^3*Log[f]]*Log[f
])/3
```

Rubi [A] time = 0.0681349, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{3}bf^a\log(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{f^{a+bx^3}}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^4,x]
```

```
[Out] -f^(a + b*x^3)/(3*x^3) + (b*f^a*ExpIntegralEi[b*x^3*Log[f]]*Log[f
])/3
```

Rubi in Sympy [A] time = 5.53877, size = 32, normalized size = 0.91

$$\frac{bf^a\log(f)\operatorname{Ei}\left(bx^3\log(f)\right)}{3}-\frac{f^{a+bx^3}}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**4,x)
```

```
[Out] b*f**a*log(f)*Ei(b*x**3*log(f))/3 - f**(a + b*x**3)/(3*x**3)
```

Mathematica [A] time = 0.016307, size = 32, normalized size = 0.91

$$\frac{1}{3}f^a\left(b\log(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{f^{bx^3}}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^4,x]
```

```
[Out] (f^a*(-(f^(b*x^3)/x^3) + b*ExpIntegralEi[b*x^3*Log[f]]*Log[f]))/3
```

Maple [B] time = 0.033, size = 97, normalized size = 2.8

$$-\frac{f^ab\ln(f)}{3}\left(\frac{1}{bx^3\ln(f)}+1-3\ln(x)-\ln(-b)-\ln(\ln(f))-\frac{2bx^3\ln(f)+2}{2bx^3\ln(f)}+\frac{e^{bx^3\ln(f)}}{bx^3\ln(f)}+\ln\left(-bx^3\ln(f)\right)+Ei\left(1,-bx^3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)/x^4,x)
```

```
[Out] -1/3*f^a*b*ln(f)*(1/x^3/b/ln(f)+1-3*ln(x)-ln(-b)-ln(ln(f))-1/2/b/
x^3/ln(f)*(2*b*x^3*ln(f)+2)+1/b/x^3/ln(f)*exp(b*x^3*ln(f))+ln(-b*
x^3*ln(f))+Ei(1,-b*x^3*ln(f)))
```

Maxima [A] time = 0.845398, size = 24, normalized size = 0.69

$$\frac{1}{3}\,bf^{a}\left(-1,-bx^{3}\log\left(f\right)\right)\log\left(f\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^4,x, algorithm="maxima")
```

```
[Out] 1/3*b*f^a*gamma(-1, -b*x^3*log(f))*log(f)
```

Fricas [A] time = 0.256073, size = 47, normalized size = 1.34

$$\frac{bf^{a}x^{3}\mathrm{Ei}\left(bx^{3}\log\left(f\right)\right)\log\left(f\right)-f^{bx^{3}+a}}{3\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^4,x, algorithm="fricas")
```

```
[Out] 1/3*(b*f^a*x^3*Ei(b*x^3*log(f))*log(f) - f^(b*x^3 + a))/x^3
```

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

$$\int\frac{f^{a+bx^{3}}}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)/x**4,x)
```

```
[Out] Integral(f**(a + b*x**3)/x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{bx^{3}+a}}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^4,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^4, x)
```

3.104 $\int \frac{f^{a+bx^3}}{x^7}\,dx$

Optimal. Leaf size=58

$$\frac{1}{6}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{b\log(f)f^{a+bx^3}}{6x^3}-\frac{f^{a+bx^3}}{6x^6}$$

```
[Out] -f^(a + b*x^3)/(6*x^6) - (b*f^(a + b*x^3)*Log[f])/(6*x^3) + (b^2*
f^a*ExpIntegralEi[b*x^3*Log[f]]*Log[f]^2)/6
```

Rubi [A] time = 0.104437, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{6}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{b\log(f)f^{a+bx^3}}{6x^3}-\frac{f^{a+bx^3}}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^7,x]
```

```
[Out] -f^(a + b*x^3)/(6*x^6) - (b*f^(a + b*x^3)*Log[f])/(6*x^3) + (b^2*
f^a*ExpIntegralEi[b*x^3*Log[f]]*Log[f]^2)/6
```

Rubi in Sympy [A] time = 8.47903, size = 54, normalized size = 0.93

$$\frac{b^2 f^a \log(f)^2\,\text{Ei}\left(bx^3\log(f)\right)}{6}-\frac{bf^{a+bx^3}\log(f)}{6x^3}-\frac{f^{a+bx^3}}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**7,x)
```

```
[Out] b**2*f**a*log(f)**2*Ei(b*x**3*log(f))/6 - b*f**(a + b*x**3)*log(f
)/(6*x**3) - f**(a + b*x**3)/(6*x**6)
```

Mathematica [A] time = 0.0310371, size = 48, normalized size = 0.83

$$\frac{f^a\left(b^2x^6\log^2(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-f^{bx^3}\left(bx^3\log(f)+1\right)\right)}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^7,x]
```

```
[Out] (f^a*(b^2*x^6*ExpIntegralEi[b*x^3*Log[f]]*Log[f]^2 - f^(b*x^3)*(1
 + b*x^3*Log[f])))/(6*x^6)
```

Maple [B] time = 0.046, size = 141, normalized size = 2.4

$$\frac{f^a b^2(\ln(f))^2}{3}\left(-\frac{1}{2b^2x^6(\ln(f))^2}-\frac{1}{bx^3\ln(f)}-\frac{3}{4}+\frac{3\ln(x)}{2}+\frac{\ln(-b)}{2}+\frac{\ln(\ln(f))}{2}+\frac{9b^2x^6(\ln(f))^2+12bx^3\ln(f)+6}{12b^2x^6(\ln(f))^2}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(b*x^3+a)/x^7,x)
```

```
[Out] 1/3*f^a*b^2*ln(f)^2*(-1/2/x^6/b^2/ln(f)^2-1/x^3/b/ln(f)-3/4+3/2*l
n(x)+1/2*ln(-b)+1/2*ln(ln(f))+1/12/b^2/x^6/ln(f)^2*(9*b^2*x^6*ln(
f)^2+12*b*x^3*ln(f)+6)-1/6/b^2/x^6/ln(f)^2*(3*b*x^3*ln(f)+3)*exp(
b*x^3*ln(f))-1/2*ln(-b*x^3*ln(f))-1/2*Ei(1,-b*x^3*ln(f)))
```

Maxima [A] time = 0.882627, size = 30, normalized size = 0.52

$$-\frac{1}{3}\,b^2 f^a\,\left(-2,-bx^3\log\left(f\right)\right)\log\left(f\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^3 + a)/x^7,x, algorithm="maxima")
```

```
[Out] -1/3*b^2*f^a*gamma(-2, -b*x^3*log(f))*log(f)^2
```

Fricas [A] time = 0.260014, size = 65, normalized size = 1.12

$$\frac{b^2 f^a x^6 \mathrm{Ei}\left(bx^3\log\left(f\right)\right)\log\left(f\right)^2-\left(bx^3\log\left(f\right)+1\right)f^{bx^3+a}}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^3 + a)/x^7,x, algorithm="fricas")
```

```
[Out] 1/6*(b^2*f^a*x^6*Ei(b*x^3*log(f))*log(f)^2 - (b*x^3*log(f) + 1)*f
^(b*x^3 + a))/x^6
```

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

$$\int\frac{f^{a+bx^3}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(b*x**3+a)/x**7,x)
```

```
[Out] Integral(f**(a + b*x**3)/x**7, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{bx^3+a}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^3 + a)/x^7,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^7, x)
```

3.105 $\int \frac{f^{a+bx^3}}{x^{10}}\,dx$

Optimal. Leaf size=81

$$\frac{1}{18}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{b^2\log^2(f)f^{a+bx^3}}{18x^3}-\frac{f^{a+bx^3}}{9x^9}-\frac{b\log(f)f^{a+bx^3}}{18x^6}$$

```
[Out] -f^(a + b*x^3)/(9*x^9) - (b*f^(a + b*x^3)*Log[f])/(18*x^6) - (b^2
*f^(a + b*x^3)*Log[f]^2)/(18*x^3) + (b^3*f^a*ExpIntegralEi[b*x^3*
Log[f]]*Log[f]^3)/18
```

Rubi [A] time = 0.144442, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{18}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-\frac{b^2\log^2(f)f^{a+bx^3}}{18x^3}-\frac{f^{a+bx^3}}{9x^9}-\frac{b\log(f)f^{a+bx^3}}{18x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^10,x]
```

```
[Out] -f^(a + b*x^3)/(9*x^9) - (b*f^(a + b*x^3)*Log[f])/(18*x^6) - (b^2
*f^(a + b*x^3)*Log[f]^2)/(18*x^3) + (b^3*f^a*ExpIntegralEi[b*x^3*
Log[f]]*Log[f]^3)/18
```

Rubi in Sympy [A] time = 12.0295, size = 76, normalized size = 0.94

$$\frac{b^3 f^a \log(f)^3 \operatorname{Ei}\left(bx^3\log(f)\right)}{18}-\frac{b^2 f^{a+bx^3}\log(f)^2}{18x^3}-\frac{bf^{a+bx^3}\log(f)}{18x^6}-\frac{f^{a+bx^3}}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**10,x)
```

```
[Out] b**3*f**a*log(f)**3*Ei(b*x**3*log(f))/18 - b**2*f**(a + b*x**3)*l
og(f)**2/(18*x**3) - b*f**(a + b*x**3)*log(f)/(18*x**6) - f**(a +
 b*x**3)/(9*x**9)
```

Mathematica [A] time = 0.0387487, size = 59, normalized size = 0.73

$$\frac{f^a\left(b^3x^9\log^3(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-f^{bx^3}\left(b^2x^6\log^2(f)+bx^3\log(f)+2\right)\right)}{18x^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^10,x]
```

```
[Out] (f^a*(b^3*x^9*ExpIntegralEi[b*x^3*Log[f]]*Log[f]^3 - f^(b*x^3)*(2
 + b*x^3*Log[f] + b^2*x^6*Log[f]^2)))/(18*x^9)
```

Maple [B] time = 0.056, size = 177, normalized size = 2.2

$$-\frac{f^a b^3(\ln(f))^3}{3}\left(\frac{1}{3b^3x^9(\ln(f))^3}+\frac{1}{2b^2x^6(\ln(f))^2}+\frac{1}{2bx^3\ln(f)}+\frac{11}{36}-\frac{\ln(x)}{2}-\frac{\ln(-b)}{6}-\frac{\ln(\ln(f))}{6}-\frac{22b^3x^9(\ln(f))^3+}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)/x^10,x)
```

```
[Out] -1/3*f^a*b^3*ln(f)^3*(1/3/x^9/b^3/ln(f)^3+1/2/x^6/b^2/ln(f)^2+1/2
/x^3/b/ln(f)+11/36-1/2*ln(x)-1/6*ln(-b)-1/6*ln(ln(f))-1/72/b^3/x^
9/ln(f)^3*(22*b^3*x^9*ln(f)^3+36*b^2*x^6*ln(f)^2+36*b*x^3*ln(f)+2
4)+1/24/b^3/x^9/ln(f)^3*(4*b^2*x^6*ln(f)^2+4*b*x^3*ln(f)+8)*exp(b
*x^3*ln(f))+1/6*ln(-b*x^3*ln(f))+1/6*Ei(1,-b*x^3*ln(f)))
```

Maxima [A] time = 0.850912, size = 30, normalized size = 0.37

$$\frac{1}{3}\,b^3 f^a\left(-3,-bx^3\log\left(f\right)\right)\log\left(f\right)^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^10,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*f^a*gamma(-3, -b*x^3*log(f))*log(f)^3
```

Fricas [A] time = 0.254793, size = 80, normalized size = 0.99

$$\frac{b^3 f^a x^9 \text{Ei}\left(bx^3\log\left(f\right)\right)\log\left(f\right)^3-\left(b^2x^6\log\left(f\right)^2+bx^3\log\left(f\right)+2\right)f^{bx^3+a}}{18\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^10,x, algorithm="fricas")
```

```
[Out] 1/18*(b^3*f^a*x^9*Ei(b*x^3*log(f))*log(f)^3 - (b^2*x^6*log(f)^2 +
 b*x^3*log(f) + 2)*f^(b*x^3 + a))/x^9
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)/x**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^3+a}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^10,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^10, x)
```

3.106 $\int \frac{f^{a+bx^3}}{x^{13}}\,dx$

Optimal. Leaf size=24

$$-\frac{1}{3}b^4 f^a \log^4(f)\text{Gamma}\left(-4,-bx^3\log(f)\right)$$

```
[Out] -(b^4*f^a*Gamma[-4, -(b*x^3*Log[f])]*Log[f]^4)/3
```

Rubi [A] time = 0.0375154, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{1}{3}b^4 f^a \log^4(f)\text{Gamma}\left(-4,-bx^3\log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^13,x]
```

```
[Out] -(b^4*f^a*Gamma[-4, -(b*x^3*Log[f])]*Log[f]^4)/3
```

Rubi in Sympy [A] time = 3.65257, size = 27, normalized size = 1.12

$$-\frac{b^4 f^a\left(-4,-bx^3\log(f)\right)\log(f)^4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**13,x)
```

```
[Out] -b**4*f**a*Gamma(-4, -b*x**3*log(f))*log(f)**4/3
```

Mathematica [B] time = 0.0472257, size = 71, normalized size = 2.96

$$\frac{f^a\left(b^4x^{12}\log^4(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-f^{bx^3}\left(b^3x^9\log^3(f)+b^2x^6\log^2(f)+2bx^3\log(f)+6\right)\right)}{72x^{12}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^13,x]
```

```
[Out] (f^a*(b^4*x^12*ExpIntegralEi[b*x^3*Log[f]]*Log[f]^4 - f^(b*x^3)*(
6 + 2*b*x^3*Log[f] + b^2*x^6*Log[f]^2 + b^3*x^9*Log[f]^3)))/(72*x
^12)
```

Maple [B] time = 0.073, size = 213, normalized size = 8.9

$$\frac{f^a b^4(\ln(f))^4}{3}\left(-\frac{1}{4\,b^4x^{12}(\ln(f))^4}-\frac{1}{3\,b^3x^9(\ln(f))^3}-\frac{1}{4\,b^2x^6(\ln(f))^2}-\frac{1}{6\,bx^3\ln(f)}-\frac{25}{288}+\frac{\ln(x)}{8}+\frac{\ln(-b)}{24}+\frac{\ln(\ln(f))}{24}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)/x^13,x)
```

```
[Out] 1/3*f^a*b^4*ln(f)^4*(-1/4/x^12/b^4/ln(f)^4-1/3/x^9/b^3/ln(f)^3-1/
4/x^6/b^2/ln(f)^2-1/6/x^3/b/ln(f)-25/288+1/8*ln(x)+1/24*ln(-b)+1/
24*ln(ln(f))+1/1440/b^4/x^12/ln(f)^4*(125*b^4*x^12*ln(f)^4+240*b^
3*x^9*ln(f)^3+360*b^2*x^6*ln(f)^2+480*b*x^3*ln(f)+360)-1/120/b^4/
x^12/ln(f)^4*(5*b^3*x^9*ln(f)^3+5*b^2*x^6*ln(f)^2+10*b*x^3*ln(f)+
30)*exp(b*x^3*ln(f))-1/24*ln(-b*x^3*ln(f))-1/24*Ei(1,-b*x^3*ln(f)
))
```

Maxima [A] time = 0.830885, size = 30, normalized size = 1.25

$$-\frac{1}{3}\,b^4 f^a\,\Gamma\left(-4, -bx^3\log\left(f\right)\right)\log\left(f\right)^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^13,x, algorithm="maxima")
```

```
[Out] -1/3*b^4*f^a*gamma(-4, -b*x^3*log(f))*log(f)^4
```

Fricas [A] time = 0.265577, size = 96, normalized size = 4.

$$\frac{b^4 f^a x^{12}\mathrm{Ei}\left(bx^3\log\left(f\right)\right)\log\left(f\right)^4 - \left(b^3x^9\log\left(f\right)^3 + b^2x^6\log\left(f\right)^2 + 2\,bx^3\log\left(f\right) + 6\right)f^{bx^3+a}}{72\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^13,x, algorithm="fricas")
```

```
[Out] 1/72*(b^4*f^a*x^12*Ei(b*x^3*log(f))*log(f)^4 - (b^3*x^9*log(f)^3
+ b^2*x^6*log(f)^2 + 2*b*x^3*log(f) + 6)*f^(b*x^3 + a))/x^12
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)/x**13,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^3+a}}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^13,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^13, x)
```

3.107 $\int \frac{f^{a+bx^3}}{x^{16}} dx$

Optimal. Leaf size=24

$$\frac{1}{3}b^5 f^a \log^5(f)\text{Gamma}\left(-5,-bx^3\log(f)\right)$$

```
[Out] (b^5*f^a*Gamma[-5, -(b*x^3*Log[f])]*Log[f]^5)/3
```

Rubi [A] time = 0.0371705, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{1}{3}b^5 f^a \log^5(f)\text{Gamma}\left(-5,-bx^3\log(f)\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^16,x]

[Out] (b^5*f^a*Gamma[-5, -(b*x^3*Log[f])]*Log[f]^5)/3
```

Rubi in Sympy [A] time = 3.64085, size = 26, normalized size = 1.08

$$\frac{b^5 f^a\left(-5,-bx^3\log(f)\right)\log(f)^5}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**16,x)

[Out] b**5*f**a*Gamma(-5, -b*x**3*log(f))*log(f)**5/3
```

Mathematica [B] time = 0.0551046, size = 83, normalized size = 3.46

$$\frac{f^a\left(b^5x^{15}\log^5(f)\text{ExpIntegralEi}\left(bx^3\log(f)\right)-f^{bx^3}\left(b^4x^{12}\log^4(f)+b^3x^9\log^3(f)+2b^2x^6\log^2(f)+6bx^3\log(f)+24\right)\right)}{360x^{15}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^16,x]

[Out] (f^a*(b^5*x^15*ExpIntegralEi[b*x^3*Log[f]]*Log[f]^5 - f^(b*x^3)*(
24 + 6*b*x^3*Log[f] + 2*b^2*x^6*Log[f]^2 + b^3*x^9*Log[f]^3 + b^4
*x^12*Log[f]^4)))/(360*x^15)
```

Maple [B] time = 0.099, size = 249, normalized size = 10.4

$$-\frac{f^a b^5(\ln(f))^5}{3}\left(\frac{1}{5\,b^5x^{15}(\ln(f))^5}+\frac{1}{4\,b^4x^{12}(\ln(f))^4}+\frac{1}{6\,b^3x^9(\ln(f))^3}+\frac{1}{12\,b^2x^6(\ln(f))^2}+\frac{1}{24\,bx^3\ln(f)}+\frac{137}{7200}-\frac{\ln(x)}{40}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)/x^16,x)
```

```
[Out] -1/3*f^a*b^5*ln(f)^5*(1/5/x^15/b^5/ln(f)^5+1/4/x^12/b^4/ln(f)^4+1
/6/x^9/b^3/ln(f)^3+1/12/x^6/b^2/ln(f)^2+1/24/x^3/b/ln(f)+137/7200
-1/40*ln(x)-1/120*ln(-b)-1/120*ln(ln(f))-1/7200/b^5/x^15/ln(f)^5*
(137*b^5*x^15*ln(f)^5+300*b^4*x^12*ln(f)^4+600*b^3*x^9*ln(f)^3+12
00*b^2*x^6*ln(f)^2+1800*b*x^3*ln(f)+1440)+1/720/b^5/x^15/ln(f)^5*
(6*b^4*x^12*ln(f)^4+6*b^3*x^9*ln(f)^3+12*b^2*x^6*ln(f)^2+36*b*x^3
*ln(f)+144)*exp(b*x^3*ln(f))+1/120*ln(-b*x^3*ln(f))+1/120*Ei(1,-b
*x^3*ln(f)))
```

Maxima [A] time = 0.930167, size = 30, normalized size = 1.25

$$\frac{1}{3}\,b^5 f^a\,\left(-5,-bx^3\log\left(f\right)\right)\,\log\left(f\right)^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^16,x, algorithm="maxima")
```

```
[Out] 1/3*b^5*f^a*gamma(-5, -b*x^3*log(f))*log(f)^5
```

Fricas [A] time = 0.277627, size = 112, normalized size = 4.67

$$\frac{b^5 f^a x^{15}\mathrm{Ei}\left(bx^3\log\left(f\right)\right)\log\left(f\right)^5-\left(b^4x^{12}\log\left(f\right)^4+b^3x^9\log\left(f\right)^3+2\,b^2x^6\log\left(f\right)^2+6\,bx^3\log\left(f\right)+24\right)f^{bx^3+a}}{360\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^16,x, algorithm="fricas")
```

```
[Out] 1/360*(b^5*f^a*x^15*Ei(b*x^3*log(f))*log(f)^5 - (b^4*x^12*log(f)^
4 + b^3*x^9*log(f)^3 + 2*b^2*x^6*log(f)^2 + 6*b*x^3*log(f) + 24)*
f^(b*x^3 + a))/x^15
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)/x**16,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^3+a}}{x^{16}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^16,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^16, x)
```

3.108 $\int f^{a+bx^3} x^4 \, dx$

Optimal. Leaf size=34

$$-\frac{x^5 f^a \text{Gamma}\left(\frac{5}{3}, -bx^3 \log(f)\right)}{3 \left(-bx^3 \log(f)\right)^{5/3}}$$

```
[Out] -(f^a*x^5*Gamma[5/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(5/3)
)
```

Rubi [A] time = 0.0376041, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{x^5 f^a \text{Gamma}\left(\frac{5}{3}, -bx^3 \log(f)\right)}{3 \left(-bx^3 \log(f)\right)^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^4,x]
```

```
[Out] -(f^a*x^5*Gamma[5/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(5/3)
)
```

Rubi in Sympy [A] time = 3.17933, size = 36, normalized size = 1.06

$$-\frac{f^a x^5 \left(\frac{5}{3}, -bx^3 \log(f)\right)}{3 \left(-bx^3 \log(f)\right)^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**4,x)
```

```
[Out] -f**a*x**5*Gamma(5/3, -b*x**3*log(f))/(3*(-b*x**3*log(f))**(5/3))
```

Mathematica [A] time = 0.0361584, size = 58, normalized size = 1.71

$$-\frac{x^5 f^a \left(2\text{Gamma}\left(\frac{2}{3}, -bx^3 \log(f)\right) + 3f^{bx^3} \left(-bx^3 \log(f)\right)^{2/3}\right)}{9 \left(-bx^3 \log(f)\right)^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^4,x]
```

```
[Out] -(f^a*x^5*(2*Gamma[2/3, -(b*x^3*Log[f])] + 3*f^(b*x^3)*(-(b*x^3*L
og[f]))^(2/3)))/(9*(-(b*x^3*Log[f]))^(5/3))
```

Maple [B] time = 0.033, size = 106, normalized size = 3.1

$$\frac{f^a}{3}\left(-\frac{2\,x^2\,(2/3)}{3\,b}(-b)^{\frac{5}{3}}(\ln(f))^{\frac{2}{3}}\left(-bx^3\ln(f)\right)^{-\frac{2}{3}}+\frac{x^2 e^{bx^3\ln(f)}}{b}(-b)^{\frac{5}{3}}(\ln(f))^{\frac{2}{3}}+\frac{2\,x^2}{3\,b}(-b)^{\frac{5}{3}}(\ln(f))^{\frac{2}{3}}\left(\frac{2}{3},-bx^3\ln(f)\right)\left(-bx^3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^4,x)
```

```
[Out] 1/3*f^a/(-b)^(5/3)/ln(f)^(5/3)*(-2/3*x^2*(-b)^(5/3)*ln(f)^(2/3)/b
*GAMMA(2/3)/(-b*x^3*ln(f))^(2/3)+x^2*(-b)^(5/3)*ln(f)^(2/3)/b*exp
(b*x^3*ln(f))+2/3*x^2*(-b)^(5/3)*ln(f)^(2/3)/b/(-b*x^3*ln(f))^(2/
3)*GAMMA(2/3,-b*x^3*ln(f)))
```

Maxima [A] time = 0.842373, size = 78, normalized size = 2.29

$$\frac{f^{bx^3}f^ax^2}{3\,b\log(f)}+\frac{2\,f^ax^2\,\Gamma\left(\frac{2}{3},-bx^3\log(f)\right)}{9\,(-bx^3\log(f))^{\frac{2}{3}}\,b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^4,x, algorithm="maxima")
```

```
[Out] 1/3*f^(b*x^3)*f^a*x^2/(b*log(f)) + 2/9*f^a*x^2*gamma(2/3, -b*x^3*
log(f))/((-b*x^3*log(f))^(2/3)*b*log(f))
```

Fricas [A] time = 0.328649, size = 72, normalized size = 2.12

$$\frac{3\,(-b\log(f))^{\frac{2}{3}}\,f^{bx^3+a}x^2+2\,f^a\,\Gamma\left(\frac{2}{3},-bx^3\log(f)\right)}{9\,(-b\log(f))^{\frac{2}{3}}\,b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^4,x, algorithm="fricas")
```

```
[Out] 1/9*(3*(-b*log(f))^(2/3)*f^(b*x^3 + a)*x^2 + 2*f^a*gamma(2/3, -b*
x^3*log(f)))/((-b*log(f))^(2/3)*b*log(f))
```

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

$$\int f^{a+bx^3}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**4,x)
```

```
[Out] Integral(f**(a + b*x**3)*x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^3+a}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^4,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)*x^4, x)
```

3.109 $\int f^{a+bx^3} x^3 \, dx$

Optimal. Leaf size=34

$$-\frac{x^4 f^a \text{Gamma}\left(\frac{4}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{4/3}}$$

```
[Out] -(f^a*x^4*Gamma[4/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(4/3)
)
```

Rubi [A] time = 0.037701, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{x^4 f^a \text{Gamma}\left(\frac{4}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x^3,x]
```

```
[Out] -(f^a*x^4*Gamma[4/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(4/3)
)
```

Rubi in Sympy [A] time = 3.11918, size = 36, normalized size = 1.06

$$-\frac{f^a x^4 \left(\frac{4}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x**3,x)
```

```
[Out] -f**a*x**4*Gamma(4/3, -b*x**3*log(f))/(3*(-b*x**3*log(f))**(4/3))
```

Mathematica [A] time = 0.0307404, size = 56, normalized size = 1.65

$$-\frac{x^4 f^a \left(\text{Gamma}\left(\frac{1}{3}, -bx^3 \log(f)\right) + 3 f^{bx^3} \sqrt[3]{-bx^3 \log(f)}\right)}{9\left(-bx^3 \log(f)\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x^3,x]
```

```
[Out] -(f^a*x^4*(Gamma[1/3, -(b*x^3*Log[f])] + 3*f^(b*x^3)*(-(b*x^3*Log
[f]))^(1/3)))/(9*(-(b*x^3*Log[f]))^(4/3))
```

Maple [B] time = 0.033, size = 109, normalized size = 3.2

$$-\frac{f^a}{3b}\left(-\frac{2x\pi\sqrt{3}}{9b(2/3)}(-b)^{\frac{4}{3}}\sqrt[3]{\ln(f)}\frac{1}{\sqrt[3]{-bx^3\ln(f)}} + \frac{x e^{bx^3\ln(f)}}{b}(-b)^{\frac{4}{3}}\sqrt[3]{\ln(f)} + \frac{x}{3b}(-b)^{\frac{4}{3}}\sqrt[3]{\ln(f)}\left(\frac{1}{3}, -bx^3\ln(f)\right)\frac{1}{\sqrt[3]{-bx^3\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x^3,x)
```

```
[Out] -1/3*f^a/b/ln(f)^(4/3)/(-b)^(1/3)*(-2/9*x*(-b)^(4/3)*ln(f)^(1/3)/
b*Pi*3^(1/2)/GAMMA(2/3)/(-b*x^3*ln(f))^(1/3)+x*(-b)^(4/3)*ln(f)^(
1/3)/b*exp(b*x^3*ln(f))+1/3*x*(-b)^(4/3)*ln(f)^(1/3)/b/(-b*x^3*ln
(f))^(1/3)*GAMMA(1/3,-b*x^3*ln(f)))
```

Maxima [A] time = 0.868942, size = 73, normalized size = 2.15

$$\frac{f^{bx^3} f^a x}{3\, b \log(f)} + \frac{f^a x \left(\frac{1}{3}, -bx^3 \log(f)\right)}{9\, \left(-bx^3 \log(f)\right)^{\frac{1}{3}}\, b \log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^3,x, algorithm="maxima")
```

```
[Out] 1/3*f^(b*x^3)*f^a*x/(b*log(f)) + 1/9*f^a*x*gamma(1/3, -b*x^3*log(
f))/((-b*x^3*log(f))^(1/3)*b*log(f))
```

Fricas [A] time = 0.270085, size = 68, normalized size = 2.

$$\frac{3\, \left(-b \log(f)\right)^{\frac{1}{3}} f^{bx^3+a} x + f^a \left(\frac{1}{3}, -bx^3 \log(f)\right)}{9\, \left(-b \log(f)\right)^{\frac{1}{3}}\, b \log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/9*(3*(-b*log(f))^(1/3)*f^(b*x^3 + a)*x + f^a*gamma(1/3, -b*x^3*
log(f)))/((-b*log(f))^(1/3)*b*log(f))
```

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

$$\int f^{a+bx^3} x^3\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x**3,x)
```

```
[Out] Integral(f**(a + b*x**3)*x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^3+a} x^3\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)*x^3, x)
```

3.110 $\int f^{a+bx^3} x \, dx$

Optimal. Leaf size=34

$$-\frac{x^2 f^a \text{Gamma}\left(\frac{2}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{2/3}}$$

```
[Out] -(f^a*x^2*Gamma[2/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(2/3)
)
```

Rubi [A] time = 0.0247577, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{x^2 f^a \text{Gamma}\left(\frac{2}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)*x,x]
```

```
[Out] -(f^a*x^2*Gamma[2/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(2/3)
)
```

Rubi in Sympy [A] time = 2.33207, size = 36, normalized size = 1.06

$$-\frac{f^a x^2 \left(\frac{2}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)*x,x)
```

```
[Out] -f**a*x**2*Gamma(2/3, -b*x**3*log(f))/(3*(-b*x**3*log(f))**(2/3))
```

Mathematica [A] time = 0.00991179, size = 34, normalized size = 1.

$$-\frac{x^2 f^a \text{Gamma}\left(\frac{2}{3}, -bx^3 \log(f)\right)}{3\left(-bx^3 \log(f)\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)*x,x]
```

```
[Out] -(f^a*x^2*Gamma[2/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(2/3)
)
```

Maple [B] time = 0.023, size = 75, normalized size = 2.2

$$\frac{f^a}{3}\left(x^2 \Gamma\left(\frac{2}{3}\right)(-b)^{\frac{2}{3}}(\ln(f))^{\frac{2}{3}}\left(-bx^3\ln(f)\right)^{-\frac{2}{3}} - x^2(-b)^{\frac{2}{3}}(\ln(f))^{\frac{2}{3}}\Gamma\left(\frac{2}{3}, -bx^3\ln(f)\right)\left(-bx^3\ln(f)\right)^{-\frac{2}{3}}\right)(-b)^{-\frac{2}{3}}(\ln(f))^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)*x,x)
```

```
[Out] 1/3*f^a/(-b)^(2/3)/ln(f)^(2/3)*(x^2*(-b)^(2/3)*ln(f)^(2/3)*GAMMA(
2/3)/(-b*x^3*ln(f))^(2/3)-x^2*(-b)^(2/3)*ln(f)^(2/3)/(-b*x^3*ln(f
))^(2/3)*GAMMA(2/3,-b*x^3*ln(f)))
```

Maxima [A] time = 0.88361, size = 38, normalized size = 1.12

$$-\frac{f^a x^2 \left(\frac{2}{3}, -bx^3 \log(f)\right)}{3 \left(-bx^3 \log(f)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x,x, algorithm="maxima")
```

```
[Out] -1/3*f^a*x^2*gamma(2/3, -b*x^3*log(f))/(-b*x^3*log(f))^(2/3)
```

Fricas [A] time = 0.26491, size = 30, normalized size = 0.88

$$-\frac{f^a \left(\frac{2}{3}, -bx^3 \log(f)\right)}{3 \left(-b \log(f)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x,x, algorithm="fricas")
```

```
[Out] -1/3*f^a*gamma(2/3, -b*x^3*log(f))/(-b*log(f))^(2/3)
```

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

$$\int f^{a+bx^3} x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)*x,x)
```

```
[Out] Integral(f**(a + b*x**3)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^3+a} x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)*x,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)*x, x)
```

3.111 $\int f^{a+bx^3}\,dx$

Optimal. Leaf size=32

$$-\frac{xf^a\text{Gamma}\left(\frac{1}{3},-bx^3\log(f)\right)}{3\sqrt[3]{-bx^3\log(f)}}$$

```
[Out] -(f^a*x*Gamma[1/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(1/3))
```

Rubi [A] time = 0.0109559, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{xf^a\text{Gamma}\left(\frac{1}{3},-bx^3\log(f)\right)}{3\sqrt[3]{-bx^3\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3),x]
```

```
[Out] -(f^a*x*Gamma[1/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(1/3))
```

Rubi in Sympy [A] time = 1.17719, size = 34, normalized size = 1.06

$$-\frac{f^a x\left(\frac{1}{3},-bx^3\log\left(f\right)\right)}{3\sqrt[3]{-bx^3\log\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a),x)
```

```
[Out] -f**a*x*Gamma(1/3, -b*x**3*log(f))/(3*(-b*x**3*log(f))**(1/3))
```

Mathematica [A] time = 0.00663037, size = 32, normalized size = 1.

$$-\frac{xf^a\text{Gamma}\left(\frac{1}{3},-bx^3\log(f)\right)}{3\sqrt[3]{-bx^3\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3),x]
```

```
[Out] -(f^a*x*Gamma[1/3, -(b*x^3*Log[f])])/(3*(-(b*x^3*Log[f]))^(1/3))
```

Maple [B] time = 0.018, size = 78, normalized size = 2.4

$$\frac{f^a}{3}\left(\frac{2\,x\pi\,\sqrt{3}}{3\,(2/3)}\sqrt[3]{-b}\sqrt[3]{\ln\left(f\right)}\frac{1}{\sqrt[3]{-bx^3\ln\left(f\right)}}-x\sqrt[3]{-b}\sqrt[3]{\ln\left(f\right)}\left(\frac{1}{3},-bx^3\ln\left(f\right)\right)\frac{1}{\sqrt[3]{-bx^3\ln\left(f\right)}}\right)\frac{1}{\sqrt[3]{-b}}\frac{1}{\sqrt[3]{\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a),x)
```

```
[Out] 1/3*f^a/(-b)^(1/3)/ln(f)^(1/3)*(2/3*x*(-b)^(1/3)*ln(f)^(1/3)*Pi*3
^(1/2)/GAMMA(2/3)/(-b*x^3*ln(f))^(1/3)-x*(-b)^(1/3)*ln(f)^(1/3)/(
-b*x^3*ln(f))^(1/3)*GAMMA(1/3,-b*x^3*ln(f)))
```

Maxima [A] time = 0.833744, size = 35, normalized size = 1.09

$$-\frac{f^a x \left(\frac{1}{3}, -bx^3 \log\left(f\right)\right)}{3 \left(-bx^3 \log\left(f\right)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a),x, algorithm="maxima")
```

```
[Out] -1/3*f^a*x*gamma(1/3, -b*x^3*log(f))/(-b*x^3*log(f))^(1/3)
```

Fricas [A] time = 0.267201, size = 30, normalized size = 0.94

$$-\frac{f^a \left(\frac{1}{3}, -bx^3 \log\left(f\right)\right)}{3 \left(-b \log\left(f\right)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a),x, algorithm="fricas")
```

```
[Out] -1/3*f^a*gamma(1/3, -b*x^3*log(f))/(-b*log(f))^(1/3)
```

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

$$\int f^{a+bx^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a),x)
```

```
[Out] Integral(f**(a + b*x**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^3+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a), x)
```

3.112 $\int \frac{f^{a+bx^3}}{x^2}\,dx$

Optimal. Leaf size=34

$$-\frac{f^a \sqrt[3]{-bx^3 \log(f)}\,\text{Gamma}\left(-\frac{1}{3}, -bx^3 \log(f)\right)}{3x}$$

```
[Out] -(f^a*Gamma[-1/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]))^(1/3))/(3*x)
```

Rubi [A] time = 0.0365929, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a \sqrt[3]{-bx^3 \log(f)}\,\text{Gamma}\left(-\frac{1}{3}, -bx^3 \log(f)\right)}{3x}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^2,x]
```

```
[Out] -(f^a*Gamma[-1/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]))^(1/3))/(3*x)
```

Rubi in Sympy [A] time = 3.10889, size = 36, normalized size = 1.06

$$-\frac{f^a \sqrt[3]{-bx^3 \log(f)}\left(-\frac{1}{3}, -bx^3 \log(f)\right)}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**2,x)
```

```
[Out] -f**a*(-b*x**3*log(f))**(1/3)*Gamma(-1/3, -b*x**3*log(f))/(3*x)
```

Mathematica [A] time = 0.0341675, size = 42, normalized size = 1.24

$$\frac{f^a \left(\sqrt[3]{-bx^3 \log(f)}\,\text{Gamma}\left(\frac{2}{3}, -bx^3 \log(f)\right) - f^{bx^3}\right)}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^2,x]
```

```
[Out] (f^a*(-f^(b*x^3) + Gamma[2/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]))^
(1/3)))/x
```

Maple [B] time = 0.029, size = 100, normalized size = 2.9

$$\frac{f^a}{3}\sqrt[3]{-b}\sqrt[3]{\ln(f)}\left(3\,\frac{x^2(\ln(f))^{2/3}\,b\,(2/3)}{\sqrt[3]{-b}\,(-bx^3\ln(f))^{2/3}} - 3\,\frac{e^{bx^3\ln(f)}}{x\sqrt[3]{-b}\sqrt[3]{\ln(f)}} - 3\,\frac{x^2(\ln(f))^{2/3}\,b\,(2/3, -bx^3\ln(f))}{\sqrt[3]{-b}\,(-bx^3\ln(f))^{2/3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(b*x^3+a)/x^2,x)
```

```
[Out] 1/3*f^a*(-b)^(1/3)*ln(f)^(1/3)*(3*x^2/(-b)^(1/3)*ln(f)^(2/3)*b*GA
MMA(2/3)/(-b*x^3*ln(f))^(2/3)-3/x/(-b)^(1/3)/ln(f)^(1/3)*exp(b*x^
3*ln(f))-3*x^2/(-b)^(1/3)*ln(f)^(2/3)*b/(-b*x^3*ln(f))^(2/3)*GAMM
A(2/3,-b*x^3*ln(f)))
```

Maxima [A] time = 0.834768, size = 38, normalized size = 1.12

$$-\frac{\left(-bx^3\log\left(f\right)\right)^{\frac{1}{3}} f^a \Gamma\left(-\frac{1}{3}, -bx^3\log\left(f\right)\right)}{3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^2,x, algorithm="maxima")
```

```
[Out] -1/3*(-b*x^3*log(f))^(1/3)*f^a*gamma(-1/3, -b*x^3*log(f))/x
```

Fricas [A] time = 0.271939, size = 65, normalized size = 1.91

$$-\frac{bf^a x \Gamma\left(\frac{2}{3}, -bx^3\log\left(f\right)\right)\log\left(f\right) + \left(-b\log\left(f\right)\right)^{\frac{2}{3}} f^{bx^3+a}}{\left(-b\log\left(f\right)\right)^{\frac{2}{3}} x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^2,x, algorithm="fricas")
```

```
[Out] -(b*f^a*x*gamma(2/3, -b*x^3*log(f))*log(f) + (-b*log(f))^(2/3)*f^
(b*x^3 + a))/((-b*log(f))^(2/3)*x)
```

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

$$\int \frac{f^{a+bx^3}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(b*x**3+a)/x**2,x)
```

```
[Out] Integral(f**(a + b*x**3)/x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^3+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^3 + a)/x^2,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^2, x)
```

3.113 $\int \frac{f^{a+bx^3}}{x^3}\,dx$

Optimal. Leaf size=34

$$-\frac{f^a\left(-bx^3\log(f)\right)^{2/3}\mathrm{Gamma}\left(-\frac{2}{3},-bx^3\log(f)\right)}{3x^2}$$

```
[Out] -(f^a*Gamma[-2/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]))^(2/3))/(3*x^
2)
```

Rubi [A] time = 0.0361805, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^a\left(-bx^3\log(f)\right)^{2/3}\mathrm{Gamma}\left(-\frac{2}{3},-bx^3\log(f)\right)}{3x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^3)/x^3,x]
```

```
[Out] -(f^a*Gamma[-2/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]))^(2/3))/(3*x^
2)
```

Rubi in Sympy [A] time = 3.1442, size = 37, normalized size = 1.09

$$-\frac{f^a\left(-bx^3\log(f)\right)^{\frac{2}{3}}\left(-\frac{2}{3},-bx^3\log(f)\right)}{3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(b*x**3+a)/x**3,x)
```

```
[Out] -f**a*(-b*x**3*log(f))**(2/3)*Gamma(-2/3, -b*x**3*log(f))/(3*x**2
)
```

Mathematica [A] time = 0.0327263, size = 44, normalized size = 1.29

$$-\frac{f^a\left(f^{bx^3}-\left(-bx^3\log(f)\right)^{2/3}\mathrm{Gamma}\left(\frac{1}{3},-bx^3\log(f)\right)\right)}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^3)/x^3,x]
```

```
[Out] -(f^a*(f^(b*x^3) - Gamma[1/3, -(b*x^3*Log[f])]*(-(b*x^3*Log[f]))^
(2/3)))/(2*x^2)
```

Maple [B] time = 0.033, size = 102, normalized size = 3.

$$-\frac{f^a b}{3}(\ln(f))^{\frac{2}{3}}\left(\frac{bx\pi\sqrt{3}}{\left(\frac{2}{3}\right)}\sqrt[3]{\ln(f)}(-b)^{-\frac{2}{3}}\frac{1}{\sqrt[3]{-bx^3\ln(f)}}-\frac{3\,e^{bx^3\ln(f)}}{2\,x^2}(-b)^{-\frac{2}{3}}(\ln(f))^{-\frac{2}{3}}-\frac{3\,bx}{2}\sqrt[3]{\ln(f)}\left(\frac{1}{3},-bx^3\ln(f)\right)(-b)^{-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(b*x^3+a)/x^3,x)
```

```
[Out] -1/3*f^a*b*ln(f)^(2/3)/(-b)^(1/3)*(x/(-b)^(2/3)*ln(f)^(1/3)*b*Pi*
3^(1/2)/GAMMA(2/3)/(-b*x^3*ln(f))^(1/3)-3/2/x^2/(-b)^(2/3)/ln(f)^
(2/3)*exp(b*x^3*ln(f))-3/2*x/(-b)^(2/3)*ln(f)^(1/3)*b/(-b*x^3*ln(
f))^(1/3)*GAMMA(1/3,-b*x^3*ln(f)))
```

Maxima [A] time = 0.839323, size = 38, normalized size = 1.12

$$-\frac{\left(-bx^3\log(f)\right)^{\frac{2}{3}} f^a \left(-\frac{2}{3}, -bx^3\log(f)\right)}{3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^3 + a)/x^3,x, algorithm="maxima")
```

```
[Out] -1/3*(-b*x^3*log(f))^(2/3)*f^a*gamma(-2/3, -b*x^3*log(f))/x^2
```

Fricas [A] time = 0.267215, size = 68, normalized size = 2.

$$-\frac{bf^a x^2 \left(\frac{1}{3}, -bx^3\log(f)\right)\log(f) + \left(-b\log(f)\right)^{\frac{1}{3}} f^{bx^3+a}}{2\left(-b\log(f)\right)^{\frac{1}{3}} x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^3 + a)/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b*f^a*x^2*gamma(1/3, -b*x^3*log(f))*log(f) + (-b*log(f))^(1
/3)*f^(b*x^3 + a))/((-b*log(f))^(1/3)*x^2)
```

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

$$\int \frac{f^{a+bx^3}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(b*x**3+a)/x**3,x)
```

```
[Out] Integral(f**(a + b*x**3)/x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^3+a}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^3 + a)/x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^3 + a)/x^3, x)
```

3.114 $\int e^{4x^3} x^2 \, dx$

Optimal. Leaf size=11

$$\frac{e^{4x^3}}{12}$$

```
[Out] E^(4*x^3)/12
```

Rubi [A] time = 0.023625, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{e^{4x^3}}{12}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x^3)*x^2,x]

[Out] E^(4*x^3)/12
```

Rubi in Sympy [A] time = 3.00273, size = 7, normalized size = 0.64

$$\frac{e^{4x^3}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x**3)*x**2,x)

[Out] exp(4*x**3)/12
```

Mathematica [A] time = 0.00304528, size = 11, normalized size = 1.

$$\frac{e^{4x^3}}{12}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x^3)*x^2,x]

[Out] E^(4*x^3)/12
```

Maple [A] time = 0.005, size = 9, normalized size = 0.8

$$\frac{e^{4\,x^3}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x^3)*x^2,x)
```

```
[Out] 1/12*exp(4*x^3)
```

Maxima [A] time = 0.79253, size = 11, normalized size = 1.

$$\frac{1}{12}\, e^{\left(4\,x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(4*x^3),x, algorithm="maxima")
```

```
[Out] 1/12*e^(4*x^3)
```

Fricas [A] time = 0.258152, size = 11, normalized size = 1.

$$\frac{1}{12}\, e^{\left(4\,x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(4*x^3),x, algorithm="fricas")
```

```
[Out] 1/12*e^(4*x^3)
```

Sympy [A] time = 0.12724, size = 7, normalized size = 0.64

$$\frac{e^{4x^3}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x**3)*x**2,x)
```

```
[Out] exp(4*x**3)/12
```

GIAC/XCAS [A] time = 0.237413, size = 11, normalized size = 1.

$$\frac{1}{12}\, e^{\left(4\,x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(4*x^3),x, algorithm="giac")
```

```
[Out] 1/12*e^(4*x^3)
```

3.115 $\int f^{a+\frac{b}{x}} x^m \, dx$

Optimal. Leaf size=35

$$f^a x^{m+1} \left(-\frac{b \log(f)}{x}\right)^{m+1} \text{Gamma}\left(-m-1, -\frac{b \log(f)}{x}\right)$$

```
[Out] f^a*x^(1 + m)*Gamma[-1 - m, -((b*Log[f])/x)]*(-((b*Log[f])/x))^(1
 + m)
```

Rubi [A] time = 0.0347828, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$f^a x^{m+1} \left(-\frac{b \log(f)}{x}\right)^{m+1} \text{Gamma}\left(-m-1, -\frac{b \log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)*x^m,x]
```

```
[Out] f^a*x^(1 + m)*Gamma[-1 - m, -((b*Log[f])/x)]*(-((b*Log[f])/x))^(1
 + m)
```

Rubi in Sympy [A] time = 3.46735, size = 32, normalized size = 0.91

$$f^a x^{m+1} \left(-\frac{b \log(f)}{x}\right)^{m+1} \left(-m-1, -\frac{b \log(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)*x**m,x)
```

```
[Out] f**a*x**(m + 1)*(-b*log(f)/x)**(m + 1)*Gamma(-m - 1, -b*log(f)/x)
```

Mathematica [A] time = 0.0237543, size = 35, normalized size = 1.

$$f^a x^{m+1} \left(-\frac{b \log(f)}{x}\right)^{m+1} \text{Gamma}\left(-m-1, -\frac{b \log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)*x^m,x]
```

```
[Out] f^a*x^(1 + m)*Gamma[-1 - m, -((b*Log[f])/x)]*(-((b*Log[f])/x))^(1
 + m)
```

Maple [B] time = 0.053, size = 136, normalized size = 3.9

$$f^a (-b)^m (\ln(f))^{1+m} b \left(-\frac{x^m (-b)^{-m} (\ln(f))^{-m} (-m)}{1+m} \left(-\frac{b \ln(f)}{x}\right)^m + \frac{x^{1+m} (-b)^{-m} (\ln(f))^{-m-1}}{(1+m) b} e^{\frac{b \ln(f)}{x}} + \frac{x^m (-b)^{-m} (\ln(f))^{-m}}{1+m} \left(-\frac{b \ln(f)}{x}\right)^m \left(-m, -\frac{b \ln(f)}{x}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)*x^m,x)
```

```
[Out] f^a*(-b)^m*ln(f)^(1+m)*b*(-1/(1+m)*x^m*(-b)^(-m)*ln(f)^(-m)*GAMMA
(-m)*(-b*ln(f)/x)^m+1/(1+m)*x^(1+m)*(-b)^(-m)*ln(f)^(-m-1)/b*exp(
b*ln(f)/x)+1/(1+m)*x^m*(-b)^(-m)*ln(f)^(-m)*(-b*ln(f)/x)^m*GAMMA(
-m,-b*ln(f)/x))
```

Maxima [A] time = 0.850413, size = 47, normalized size = 1.34

$$f^a x^{m+1} \left(-\frac{b \log(f)}{x}\right)^{m+1} \left(-m-1, -\frac{b \log(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^m,x, algorithm="maxima")
```

```
[Out] f^a*x^(m + 1)*(-b*log(f)/x)^(m + 1)*gamma(-m - 1, -b*log(f)/x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{\frac{ax+b}{x}} x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^((a*x + b)/x)*x^m, x)
```

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

$$\int f^{a+\frac{b}{x}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)*x**m,x)
```

```
[Out] Integral(f**(a + b/x)*x**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)*x^m, x)
```

3.116 $\int f^{a+\frac{b}{x}} x^4 \, dx$

Optimal. Leaf size=22

$$-b^5 f^a \log^5(f)\text{Gamma}\left(-5,-\frac{b\log(f)}{x}\right)$$

```
[Out] -(b^5*f^a*Gamma[-5, -((b*Log[f])/x)]*Log[f]^5)
```

Rubi [A] time = 0.0346772, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-b^5 f^a \log^5(f)\text{Gamma}\left(-5,-\frac{b\log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)*x^4,x]

[Out] -(b^5*f^a*Gamma[-5, -((b*Log[f])/x)]*Log[f]^5)
```

Rubi in Sympy [A] time = 3.65573, size = 24, normalized size = 1.09

$$-b^5 f^a\left(-5,-\frac{b\log(f)}{x}\right)\log(f)^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)*x**4,x)

[Out] -b**5*f**a*Gamma(-5, -b*log(f)/x)*log(f)**5
```

Mathematica [B] time = 0.047434, size = 77, normalized size = 3.5

$$\frac{1}{120}f^a\left(xf^{b/x}\left(b^4\log^4(f)+b^3x\log^3(f)+2b^2x^2\log^2(f)+6bx^3\log(f)+24x^4\right)-b^5\log^5(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)*x^4,x]

[Out] (f^a*(-(b^5*ExpIntegralEi[(b*Log[f])/x]*Log[f]^5) + f^(b/x)*x*(24
*x^4 + 6*b*x^3*Log[f] + 2*b^2*x^2*Log[f]^2 + b^3*x*Log[f]^3 + b^4
*Log[f]^4)))/120
```

Maple [B] time = 0.039, size = 126, normalized size = 5.7

$$\frac{x^5}{5}f^{\frac{ax+b}{x}}+\frac{b\ln(f)x^4}{20}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^2b^2x^3}{60}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^3b^3x^2}{120}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^4b^4x}{120}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^5b^5f^a}{120}Ei\left(1,-\frac{b\ln(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)*x^4,x)
```

```
[Out] 1/5*f^((a*x+b)/x)*x^5+1/20*b*ln(f)*f^((a*x+b)/x)*x^4+1/60*b^2*ln(
f)^2*f^((a*x+b)/x)*x^3+1/120*b^3*ln(f)^3*f^((a*x+b)/x)*x^2+1/120*
b^4*ln(f)^4*f^((a*x+b)/x)*x+1/120*b^5*ln(f)^5*f^a*Ei(1,-b*ln(f)/x
)
```

Maxima [A] time = 0.818673, size = 123, normalized size = 5.59

$$-\frac{1}{120}\,b^5 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x}\right)\log(f)^5 + \frac{1}{120}\left(b^4 f^a x\log(f)^4 + b^3 f^a x^2\log(f)^3 + 2\,b^2 f^a x^3\log(f)^2 + 6\,b f^a x^4\log(f) + 24\,f^a x^5\right) f^{\frac{b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^4,x, algorithm="maxima")
```

```
[Out] -1/120*b^5*f^a*Ei(b*log(f)/x)*log(f)^5 + 1/120*(b^4*f^a*x*log(f)^
4 + b^3*f^a*x^2*log(f)^3 + 2*b^2*f^a*x^3*log(f)^2 + 6*b*f^a*x^4*l
og(f) + 24*f^a*x^5)*f^(b/x)
```

Fricas [A] time = 0.261188, size = 108, normalized size = 4.91

$$-\frac{1}{120}\,b^5 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x}\right)\log(f)^5 + \frac{1}{120}\left(b^4 x\log(f)^4 + b^3 x^2\log(f)^3 + 2\,b^2 x^3\log(f)^2 + 6\,b x^4\log(f) + 24\,x^5\right) f^{\frac{ax+b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^4,x, algorithm="fricas")
```

```
[Out] -1/120*b^5*f^a*Ei(b*log(f)/x)*log(f)^5 + 1/120*(b^4*x*log(f)^4 +
b^3*x^2*log(f)^3 + 2*b^2*x^3*log(f)^2 + 6*b*x^4*log(f) + 24*x^5)*
f^((a*x + b)/x)
```

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

$$\int f^{a+\frac{b}{x}} x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)*x**4,x)
```

```
[Out] Integral(f**(a + b/x)*x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x}} x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^4,x, algorithm="giac")

[Out] integrate(f^(a + b/x)*x^4, x)
```

3.117 $\int f^{a+\frac{b}{x}} x^3 \, dx$

Optimal. Leaf size=21

$$b^4 f^a \log^4(f) \text{Gamma}\left(-4, -\frac{b\log(f)}{x}\right)$$

```
[Out] b^4*f^a*Gamma[-4, -((b*Log[f])/x)]*Log[f]^4
```

Rubi [A] time = 0.0346279, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$b^4 f^a \log^4(f) \text{Gamma}\left(-4, -\frac{b\log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)*x^3,x]
```

```
[Out] b^4*f^a*Gamma[-4, -((b*Log[f])/x)]*Log[f]^4
```

Rubi in Sympy [A] time = 3.65099, size = 22, normalized size = 1.05

$$b^4 f^a \left(-4, -\frac{b\log(f)}{x}\right) \log(f)^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)*x**3,x)
```

```
[Out] b**4*f**a*Gamma(-4, -b*log(f)/x)*log(f)**4
```

Mathematica [B] time = 0.0370927, size = 65, normalized size = 3.1

$$\frac{1}{24} f^a \left(x f^{b/x} \left(b^3 \log^3(f) + b^2 x \log^2(f) + 2bx^2 \log(f) + 6x^3\right) - b^4 \log^4(f) \text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)*x^3,x]
```

```
[Out] (f^a*(-(b^4*ExpIntegralEi[(b*Log[f])/x]*Log[f]^4) + f^(b/x)*x*(6*
x^3 + 2*b*x^2*Log[f] + b^2*x*Log[f]^2 + b^3*Log[f]^3)))/24
```

Maple [B] time = 0.029, size = 103, normalized size = 4.9

$$\frac{x^4}{4} f^{\frac{ax+b}{x}} + \frac{bx^3 \ln(f)}{12} f^{\frac{ax+b}{x}} + \frac{(\ln(f))^2 b^2 x^2}{24} f^{\frac{ax+b}{x}} + \frac{(\ln(f))^3 b^3 x}{24} f^{\frac{ax+b}{x}} + \frac{(\ln(f))^4 b^4 f^a}{24} Ei\left(1, -\frac{b\ln(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)*x^3,x)
```

```
[Out] 1/4*f^((a*x+b)/x)*x^4+1/12*b*ln(f)*f^((a*x+b)/x)*x^3+1/24*b^2*ln(
f)^2*f^((a*x+b)/x)*x^2+1/24*b^3*ln(f)^3*f^((a*x+b)/x)*x+1/24*b^4*
ln(f)^4*f^a*Ei(1,-b*ln(f)/x)
```

Maxima [A] time = 0.834159, size = 103, normalized size = 4.9

$$-\frac{1}{24}\,b^4 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x}\right)\log(f)^4+\frac{1}{24}\left(b^3 f^a x\log(f)^3+b^2 f^a x^2\log(f)^2+2\,b f^a x^3\log(f)+6\,f^a x^4\right)f^{\frac{b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^3,x, algorithm="maxima")
```

```
[Out] -1/24*b^4*f^a*Ei(b*log(f)/x)*log(f)^4 + 1/24*(b^3*f^a*x*log(f)^3
+ b^2*f^a*x^2*log(f)^2 + 2*b*f^a*x^3*log(f) + 6*f^a*x^4)*f^(b/x)
```

Fricas [A] time = 0.258494, size = 92, normalized size = 4.38

$$-\frac{1}{24}\,b^4 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x}\right)\log(f)^4+\frac{1}{24}\left(b^3 x\log(f)^3+b^2 x^2\log(f)^2+2\,b x^3\log(f)+6\,x^4\right)f^{\frac{ax+b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^3,x, algorithm="fricas")
```

```
[Out] -1/24*b^4*f^a*Ei(b*log(f)/x)*log(f)^4 + 1/24*(b^3*x*log(f)^3 + b^
2*x^2*log(f)^2 + 2*b*x^3*log(f) + 6*x^4)*f^((a*x + b)/x)
```

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

$$\int f^{a+\frac{b}{x}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)*x**3,x)
```

```
[Out] Integral(f**(a + b/x)*x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)*x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)*x^3, x)
```

3.118 $\int f^{a+\frac{b}{x}} x^2 \, dx$

Optimal. Leaf size=79

$$-\frac{1}{6}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)+\frac{1}{6}b^2 x\log^2(f)f^{a+\frac{b}{x}}+\frac{1}{3}x^3 f^{a+\frac{b}{x}}+\frac{1}{6}bx^2\log(f)f^{a+\frac{b}{x}}$$

```
[Out] (f^(a + b/x)*x^3)/3 + (b*f^(a + b/x)*x^2*Log[f])/6 + (b^2*f^(a +
b/x)*x*Log[f]^2)/6 - (b^3*f^a*ExpIntegralEi[(b*Log[f])/x]*Log[f]^
3)/6
```

Rubi [A] time = 0.101468, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{1}{6}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)+\frac{1}{6}b^2 x\log^2(f)f^{a+\frac{b}{x}}+\frac{1}{3}x^3 f^{a+\frac{b}{x}}+\frac{1}{6}bx^2\log(f)f^{a+\frac{b}{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)*x^2,x]
```

```
[Out] (f^(a + b/x)*x^3)/3 + (b*f^(a + b/x)*x^2*Log[f])/6 + (b^2*f^(a +
b/x)*x*Log[f]^2)/6 - (b^3*f^a*ExpIntegralEi[(b*Log[f])/x]*Log[f]^
3)/6
```

Rubi in Sympy [A] time = 9.70872, size = 68, normalized size = 0.86

$$-\frac{b^3 f^a \log(f)^3 \operatorname{Ei}\left(\frac{b\log(f)}{x}\right)}{6}+\frac{b^2 f^{a+\frac{b}{x}} x\log(f)^2}{6}+\frac{bf^{a+\frac{b}{x}}x^2\log(f)}{6}+\frac{f^{a+\frac{b}{x}}x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)*x**2,x)
```

```
[Out] -b**3*f**a*log(f)**3*Ei(b*log(f)/x)/6 + b**2*f**(a + b/x)*x*log(f
)**2/6 + b*f**(a + b/x)*x**2*log(f)/6 + f**(a + b/x)*x**3/3
```

Mathematica [A] time = 0.0314351, size = 53, normalized size = 0.67

$$\frac{1}{6}f^a\left(xf^{b/x}\left(b^2\log^2(f)+bx\log(f)+2x^2\right)-b^3\log^3(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)*x^2,x]
```

```
[Out] (f^a*(-(b^3*ExpIntegralEi[(b*Log[f])/x]*Log[f]^3) + f^(b/x)*x*(2*
x^2 + b*x*Log[f] + b^2*Log[f]^2)))/6
```

Maple [A] time = 0.026, size = 80, normalized size = 1.

$$\frac{x^3}{3}f^{\frac{ax+b}{x}}+\frac{bx^2\ln(f)}{6}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^2 b^2 x}{6}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^3 b^3 f^a}{6}Ei\left(1,-\frac{b\ln(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x)*x^2,x)
```

```
[Out] 1/3*f^((a*x+b)/x)*x^3+1/6*b*ln(f)*f^((a*x+b)/x)*x^2+1/6*b^2*ln(f)
^2*f^((a*x+b)/x)*x+1/6*b^3*ln(f)^3*f^a*Ei(1,-b*ln(f)/x)
```

Maxima [A] time = 0.823647, size = 82, normalized size = 1.04

$$-\frac{1}{6}\,b^3 f^a \mathrm{Ei}\left(\frac{b\log\left(f\right)}{x}\right)\log\left(f\right)^3+\frac{1}{6}\,\left(b^2 f^a x\log\left(f\right)^2+b f^a x^2\log\left(f\right)+2\,f^a x^3\right)f^{\frac{b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)*x^2,x, algorithm="maxima")
```

```
[Out] -1/6*b^3*f^a*Ei(b*log(f)/x)*log(f)^3 + 1/6*(b^2*f^a*x*log(f)^2 +
b*f^a*x^2*log(f) + 2*f^a*x^3)*f^(b/x)
```

Fricas [A] time = 0.240917, size = 76, normalized size = 0.96

$$-\frac{1}{6}\,b^3 f^a \mathrm{Ei}\left(\frac{b\log\left(f\right)}{x}\right)\log\left(f\right)^3+\frac{1}{6}\,\left(b^2 x\log\left(f\right)^2+b x^2\log\left(f\right)+2\,x^3\right)f^{\frac{ax+b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)*x^2,x, algorithm="fricas")
```

```
[Out] -1/6*b^3*f^a*Ei(b*log(f)/x)*log(f)^3 + 1/6*(b^2*x*log(f)^2 + b*x^
2*log(f) + 2*x^3)*f^((a*x + b)/x)
```

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

$$\int f^{a+\frac{b}{x}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x)*x**2,x)
```

```
[Out] Integral(f**(a + b/x)*x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)*x^2,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)*x^2, x)
```

3.119 $\int f^{a+\frac{b}{x}} x \, dx$

Optimal. Leaf size=56

$$-\frac{1}{2}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)+\frac{1}{2}x^2 f^{a+\frac{b}{x}}+\frac{1}{2}bx\log(f)f^{a+\frac{b}{x}}$$

```
[Out] (f^(a + b/x)*x^2)/2 + (b*f^(a + b/x)*x*Log[f])/2 - (b^2*f^a*ExpIn
tegralEi[(b*Log[f])/x]*Log[f]^2)/2
```

Rubi [A] time = 0.0607181, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$-\frac{1}{2}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)+\frac{1}{2}x^2 f^{a+\frac{b}{x}}+\frac{1}{2}bx\log(f)f^{a+\frac{b}{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)*x,x]
```

```
[Out] (f^(a + b/x)*x^2)/2 + (b*f^(a + b/x)*x*Log[f])/2 - (b^2*f^a*ExpIn
tegralEi[(b*Log[f])/x]*Log[f]^2)/2
```

Rubi in Sympy [A] time = 6.05451, size = 48, normalized size = 0.86

$$-\frac{b^2 f^a \log(f)^2 \operatorname{Ei}\left(\frac{b\log(f)}{x}\right)}{2}+\frac{bf^{a+\frac{b}{x}}x\log(f)}{2}+\frac{f^{a+\frac{b}{x}}x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)*x,x)
```

```
[Out] -b**2*f**a*log(f)**2*Ei(b*log(f)/x)/2 + b*f**(a + b/x)*x*log(f)/2
 + f**(a + b/x)*x**2/2
```

Mathematica [A] time = 0.0226263, size = 40, normalized size = 0.71

$$\frac{1}{2}f^a\left(xf^{b/x}(b\log(f)+x)-b^2\log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)*x,x]
```

```
[Out] (f^a*(-(b^2*ExpIntegralEi[(b*Log[f])/x]*Log[f]^2) + f^(b/x)*x*(x
+ b*Log[f])))/2
```

Maple [A] time = 0.023, size = 57, normalized size = 1.

$$\frac{x^2}{2}f^{\frac{ax+b}{x}}+\frac{\ln(f)\,bx}{2}f^{\frac{ax+b}{x}}+\frac{(\ln(f))^2\,b^2 f^a}{2}Ei\left(1,-\frac{b\ln(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x)*x,x)
```

```
[Out] 1/2*f^((a*x+b)/x)*x^2+1/2*b*ln(f)*f^((a*x+b)/x)*x+1/2*b^2*ln(f)^2
*f^a*Ei(1,-b*ln(f)/x)
```

Maxima [A] time = 0.823798, size = 62, normalized size = 1.11

$$-\frac{1}{2}\,b^2 f^a \mathrm{Ei}\left(\frac{b\log\left(f\right)}{x}\right)\log\left(f\right)^2+\frac{1}{2}\,\left(bf^a x\log\left(f\right)+f^a x^2\right)f^{\frac{b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)*x,x, algorithm="maxima")
```

```
[Out] -1/2*b^2*f^a*Ei(b*log(f)/x)*log(f)^2 + 1/2*(b*f^a*x*log(f) + f^a*
x^2)*f^(b/x)
```

Fricas [A] time = 0.255763, size = 58, normalized size = 1.04

$$-\frac{1}{2}\,b^2 f^a \mathrm{Ei}\left(\frac{b\log\left(f\right)}{x}\right)\log\left(f\right)^2+\frac{1}{2}\,\left(bx\log\left(f\right)+x^2\right)f^{\frac{ax+b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)*x,x, algorithm="fricas")
```

```
[Out] -1/2*b^2*f^a*Ei(b*log(f)/x)*log(f)^2 + 1/2*(b*x*log(f) + x^2)*f^(
(a*x + b)/x)
```

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

$$\int f^{a+\frac{b}{x}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x)*x,x)
```

```
[Out] Integral(f**(a + b/x)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)*x,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)*x, x)
```

3.120 $\int f^{a+\frac{b}{x}}\,dx$

Optimal. Leaf size=28

$$x f^{a+\frac{b}{x}}-b f^a \log(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)$$

```
[Out] f^(a + b/x)*x - b*f^a*ExpIntegralEi[(b*Log[f])/x]*Log[f]
```

Rubi [A] time = 0.0378799, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$x f^{a+\frac{b}{x}}-b f^a \log(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x),x]
```

```
[Out] f^(a + b/x)*x - b*f^a*ExpIntegralEi[(b*Log[f])/x]*Log[f]
```

Rubi in Sympy [A] time = 3.70042, size = 24, normalized size = 0.86

$$-b f^a \log(f)\,\text{Ei}\left(\frac{b\log(f)}{x}\right)+f^{a+\frac{b}{x}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x),x)
```

```
[Out] -b*f**a*log(f)*Ei(b*log(f)/x) + f**(a + b/x)*x
```

Mathematica [A] time = 0.00732057, size = 28, normalized size = 1.

$$x f^{a+\frac{b}{x}}-b f^a \log(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x),x]
```

```
[Out] f^(a + b/x)*x - b*f^a*ExpIntegralEi[(b*Log[f])/x]*Log[f]
```

Maple [A] time = 0.02, size = 32, normalized size = 1.1

$$\ln(f)\,b f^a Ei\left(1,-\frac{b\ln(f)}{x}\right)+f^{\frac{ax+b}{x}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x),x)
```

```
[Out] ln(f)*b*f^a*Ei(1,-b*ln(f)/x)+f^((a*x+b)/x)*x
```

Maxima [A] time = 0.803185, size = 39, normalized size = 1.39

$$-bf^a\mathrm{Ei}\left(\frac{b\log(f)}{x}\right)\log(f)+f^af^{\frac{b}{x}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x),x, algorithm="maxima")

[Out] -b*f^a*Ei(b*log(f)/x)*log(f) + f^a*f^(b/x)*x
```

Fricas [A] time = 0.272599, size = 41, normalized size = 1.46

$$-bf^a\mathrm{Ei}\left(\frac{b\log(f)}{x}\right)\log(f)+f^{\frac{ax+b}{x}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x),x, algorithm="fricas")

[Out] -b*f^a*Ei(b*log(f)/x)*log(f) + f^((a*x + b)/x)*x
```

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

$$\int f^{a+\frac{b}{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x),x)

[Out] Integral(f**(a + b/x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x),x, algorithm="giac")

[Out] integrate(f^(a + b/x), x)
```

3.121 $\int \frac{f^{a+\frac{b}{x}}}{x} dx$

Optimal. Leaf size=13

$$-f^a \text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)$$

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x])
```

Rubi [A] time = 0.0299392, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-f^a \text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)/x,x]
```

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x])
```

Rubi in Sympy [A] time = 3.12915, size = 12, normalized size = 0.92

$$-f^a \operatorname{Ei}\left(\frac{b\log(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)/x,x)
```

```
[Out] -f**a*Ei(b*log(f)/x)
```

Mathematica [A] time = 0.0037518, size = 13, normalized size = 1.

$$-f^a \text{ExpIntegralEi}\left(\frac{b\log(f)}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)/x,x]
```

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x])
```

Maple [A] time = 0.019, size = 15, normalized size = 1.2

$$f^a Ei\left(1, -\frac{b\ln(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)/x,x)
```

```
[Out] f^a*Ei(1,-b*ln(f)/x)
```

Maxima [A] time = 0.840594, size = 18, normalized size = 1.38

$$-f^a\text{Ei}\left(\frac{b\log(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x,x, algorithm="maxima")
```

```
[Out] -f^a*Ei(b*log(f)/x)
```

Fricas [A] time = 0.261052, size = 18, normalized size = 1.38

$$-f^a\text{Ei}\left(\frac{b\log(f)}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x,x, algorithm="fricas")
```

```
[Out] -f^a*Ei(b*log(f)/x)
```

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

$$\int \frac{f^{a+\frac{b}{x}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)/x,x)
```

```
[Out] Integral(f**(a + b/x)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)/x, x)
```

3.122 $\int \frac{f^{a+\frac{b}{x}}}{x^2} \, dx$

Optimal. Leaf size=18

$$-\frac{f^{a+\frac{b}{x}}}{b\log(f)}$$

```
[Out] -(f^(a + b/x)/(b*Log[f]))
```

Rubi [A] time = 0.0304173, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^{a+\frac{b}{x}}}{b\log(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b/x)/x^2,x]
```

```
[Out] -(f^(a + b/x)/(b*Log[f]))
```

Rubi in Sympy [A] time = 3.42955, size = 12, normalized size = 0.67

$$-\frac{f^{a+\frac{b}{x}}}{b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b/x)/x**2,x)
```

```
[Out] -f**(a + b/x)/(b*log(f))
```

Mathematica [A] time = 0.00520356, size = 18, normalized size = 1.

$$-\frac{f^{a+\frac{b}{x}}}{b\log(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b/x)/x^2,x]
```

```
[Out] -(f^(a + b/x)/(b*Log[f]))
```

Maple [A] time = 0.003, size = 19, normalized size = 1.1

$$-\frac{1}{b\ln(f)}f^{a+\frac{b}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)/x^2,x)
```

```
[Out] -f^(a+b/x)/b/ln(f)
```

Maxima [A] time = 0.923425, size = 24, normalized size = 1.33

$$-\frac{f^{a+\frac{b}{x}}}{b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^2,x, algorithm="maxima")
```

```
[Out] -f^(a + b/x)/(b*log(f))
```

Fricas [A] time = 0.26732, size = 27, normalized size = 1.5

$$-\frac{f^{\frac{ax+b}{x}}}{b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^2,x, algorithm="fricas")
```

```
[Out] -f^((a*x + b)/x)/(b*log(f))
```

Sympy [A] time = 0.228775, size = 20, normalized size = 1.11

$$\begin{cases} -\frac{f^{a+\frac{b}{x}}}{b\log(f)} & \text{for } b\log(f) \neq 0 \\ -\frac{1}{x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)/x**2,x)
```

```
[Out] Piecewise((-f**(a + b/x)/(b*log(f)), Ne(b*log(f), 0)), (-1/x, Tru
e))
```

GIAC/XCAS [A] time = 0.24468, size = 24, normalized size = 1.33

$$-\frac{f^{a+\frac{b}{x}}}{b\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^2,x, algorithm="giac")
```

```
[Out] -f^(a + b/x)/(b*ln(f))
```

3.123 $\int \frac{f^{a+\frac{b}{x}}}{x^3} \, dx$

Optimal. Leaf size=39

$$\frac{f^{a+\frac{b}{x}}}{b^2 \log^2(f)} - \frac{f^{a+\frac{b}{x}}}{bx \log(f)}$$

```
[Out] f^(a + b/x)/(b^2*Log[f]^2) - f^(a + b/x)/(b*x*Log[f])
```

Rubi [A] time = 0.0625852, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{f^{a+\frac{b}{x}}}{b^2 \log^2(f)} - \frac{f^{a+\frac{b}{x}}}{bx \log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)/x^3,x]

[Out] f^(a + b/x)/(b^2*Log[f]^2) - f^(a + b/x)/(b*x*Log[f])
```

Rubi in Sympy [A] time = 6.6541, size = 27, normalized size = 0.69

$$-\frac{f^{a+\frac{b}{x}}}{bx \log(f)} + \frac{f^{a+\frac{b}{x}}}{b^2 \log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)/x**3,x)

[Out] -f**(a + b/x)/(b*x*log(f)) + f**(a + b/x)/(b**2*log(f)**2)
```

Mathematica [A] time = 0.0107066, size = 27, normalized size = 0.69

$$\frac{f^{a+\frac{b}{x}}(x - b \log(f))}{b^2 x \log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)/x^3,x]

[Out] (f^(a + b/x)*(x - b*Log[f]))/(b^2*x*Log[f]^2)
```

Maple [A] time = 0.014, size = 49, normalized size = 1.3

$$\frac{1}{x^2} \left(\frac{x^2}{(\ln(f))^2 b^2} e^{\left(a+\frac{b}{x}\right) \ln(f)} - \frac{x}{b \ln(f)} e^{\left(a+\frac{b}{x}\right) \ln(f)} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)/x^3,x)
```

```
[Out] (1/b^2/ln(f)^2*x^2*exp((a+b/x)*ln(f))-1/b/ln(f)*x*exp((a+b/x)*ln(
f)))/x^2
```

Maxima [A] time = 0.821745, size = 28, normalized size = 0.72

$$\frac{f^a\Gamma\left(2,-\frac{b\log(f)}{x}\right)}{b^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^3,x, algorithm="maxima")
```

```
[Out] f^a*gamma(2, -b*log(f)/x)/(b^2*log(f)^2)
```

Fricas [A] time = 0.260734, size = 42, normalized size = 1.08

$$-\frac{(b\log(f)-x)f^{\frac{ax+b}{x}}}{b^2x\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^3,x, algorithm="fricas")
```

```
[Out] -(b*log(f) - x)*f^((a*x + b)/x)/(b^2*x*log(f)^2)
```

Sympy [A] time = 0.248367, size = 22, normalized size = 0.56

$$\frac{f^{a+\frac{b}{x}}(-b\log(f)+x)}{b^2x\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)/x**3,x)
```

```
[Out] f**(a + b/x)*(-b*log(f) + x)/(b**2*x*log(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)/x^3, x)
```

3.124 $\int \frac{f^{a+\frac{b}{x}}}{x^4}\,dx$

Optimal. Leaf size=61

$$-\frac{2f^{a+\frac{b}{x}}}{b^3\log^3(f)}+\frac{2f^{a+\frac{b}{x}}}{b^2x\log^2(f)}-\frac{f^{a+\frac{b}{x}}}{bx^2\log(f)}$$

```
[Out] (-2*f^(a + b/x))/(b^3*Log[f]^3) + (2*f^(a + b/x))/(b^2*x*Log[f]^2
) - f^(a + b/x)/(b*x^2*Log[f])
```

Rubi [A] time = 0.0968518, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2f^{a+\frac{b}{x}}}{b^3\log^3(f)}+\frac{2f^{a+\frac{b}{x}}}{b^2x\log^2(f)}-\frac{f^{a+\frac{b}{x}}}{bx^2\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)/x^4,x]
```

```
[Out] (-2*f^(a + b/x))/(b^3*Log[f]^3) + (2*f^(a + b/x))/(b^2*x*Log[f]^2
) - f^(a + b/x)/(b*x^2*Log[f])
```

Rubi in Sympy [A] time = 11.0674, size = 49, normalized size = 0.8

$$-\frac{f^{a+\frac{b}{x}}}{bx^2\log(f)}+\frac{2f^{a+\frac{b}{x}}}{b^2x\log(f)^2}-\frac{2f^{a+\frac{b}{x}}}{b^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)/x**4,x)
```

```
[Out] -f**(a + b/x)/(b*x**2*log(f)) + 2*f**(a + b/x)/(b**2*x*log(f)**2)
 - 2*f**(a + b/x)/(b**3*log(f)**3)
```

Mathematica [A] time = 0.0151326, size = 41, normalized size = 0.67

$$-\frac{f^{a+\frac{b}{x}}\left(b^2\log^2(f)-2bx\log(f)+2x^2\right)}{b^3x^2\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)/x^4,x]
```

```
[Out] -((f^(a + b/x)*(2*x^2 - 2*b*x*Log[f] + b^2*Log[f]^2))/(b^3*x^2*Lo
g[f]^3))
```

Maple [A] time = 0.019, size = 73, normalized size = 1.2

$$\frac{1}{x^3}\left(-2\frac{x^3}{(\ln(f))^3b^3}e^{\left(a+\frac{b}{x}\right)\ln(f)}+2\frac{x^2}{(\ln(f))^2b^2}e^{\left(a+\frac{b}{x}\right)\ln(f)}-\frac{x}{b\ln(f)}e^{\left(a+\frac{b}{x}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)/x^4,x)
```

```
[Out] (-2/b^3/ln(f)^3*x^3*exp((a+b/x)*ln(f))+2/b^2/ln(f)^2*x^2*exp((a+b
/x)*ln(f))-1/b/ln(f)*x*exp((a+b/x)*ln(f)))/x^3
```

Maxima [A] time = 0.823041, size = 30, normalized size = 0.49

$$-\frac{f^a \left(3, -\frac{b\log(f)}{x}\right)}{b^3 \log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^4,x, algorithm="maxima")
```

```
[Out] -f^a*gamma(3, -b*log(f)/x)/(b^3*log(f)^3)
```

Fricas [A] time = 0.268704, size = 58, normalized size = 0.95

$$-\frac{\left(b^2 \log(f)^2 - 2\, bx \log(f) + 2\, x^2\right) f^{\frac{ax+b}{x}}}{b^3 x^2 \log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^4,x, algorithm="fricas")
```

```
[Out] -(b^2*log(f)^2 - 2*b*x*log(f) + 2*x^2)*f^((a*x + b)/x)/(b^3*x^2*l
og(f)^3)
```

Sympy [A] time = 0.295813, size = 39, normalized size = 0.64

$$\frac{f^{a+\frac{b}{x}} \left(-b^2 \log(f)^2 + 2bx \log(f) - 2x^2\right)}{b^3 x^2 \log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)/x**4,x)
```

```
[Out] f**(a + b/x)*(-b**2*log(f)**2 + 2*b*x*log(f) - 2*x**2)/(b**3*x**2
*log(f)**3)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x}}}{x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^4,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)/x^4, x)
```

3.125 $\int \frac{f^{a+\frac{b}{x}}}{x^5} dx$

Optimal. Leaf size=82

$$\frac{6f^{a+\frac{b}{x}}}{b^4\log^4(f)} - \frac{6f^{a+\frac{b}{x}}}{b^3x\log^3(f)} + \frac{3f^{a+\frac{b}{x}}}{b^2x^2\log^2(f)} - \frac{f^{a+\frac{b}{x}}}{bx^3\log(f)}$$

```
[Out] (6*f^(a + b/x))/(b^4*Log[f]^4) - (6*f^(a + b/x))/(b^3*x*Log[f]^3)
 + (3*f^(a + b/x))/(b^2*x^2*Log[f]^2) - f^(a + b/x)/(b*x^3*Log[f]
)
```

Rubi [A] time = 0.132043, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{6f^{a+\frac{b}{x}}}{b^4\log^4(f)} - \frac{6f^{a+\frac{b}{x}}}{b^3x\log^3(f)} + \frac{3f^{a+\frac{b}{x}}}{b^2x^2\log^2(f)} - \frac{f^{a+\frac{b}{x}}}{bx^3\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)/x^5,x]
```

```
[Out] (6*f^(a + b/x))/(b^4*Log[f]^4) - (6*f^(a + b/x))/(b^3*x*Log[f]^3)
 + (3*f^(a + b/x))/(b^2*x^2*Log[f]^2) - f^(a + b/x)/(b*x^3*Log[f]
)
```

Rubi in Sympy [A] time = 16.2205, size = 70, normalized size = 0.85

$$-\frac{f^{a+\frac{b}{x}}}{bx^3\log(f)} + \frac{3f^{a+\frac{b}{x}}}{b^2x^2\log(f)^2} - \frac{6f^{a+\frac{b}{x}}}{b^3x\log(f)^3} + \frac{6f^{a+\frac{b}{x}}}{b^4\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)/x**5,x)
```

```
[Out] -f**(a + b/x)/(b*x**3*log(f)) + 3*f**(a + b/x)/(b**2*x**2*log(f)*
*2) - 6*f**(a + b/x)/(b**3*x*log(f)**3) + 6*f**(a + b/x)/(b**4*lo
g(f)**4)
```

Mathematica [A] time = 0.0162884, size = 53, normalized size = 0.65

$$\frac{f^{a+\frac{b}{x}}\left(-b^3\log^3(f) + 3b^2x\log^2(f) - 6bx^2\log(f) + 6x^3\right)}{b^4x^3\log^4(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)/x^5,x]
```

```
[Out] (f^(a + b/x)*(6*x^3 - 6*b*x^2*Log[f] + 3*b^2*x*Log[f]^2 - b^3*Log
[f]^3))/(b^4*x^3*Log[f]^4)
```

Maple [A] time = 0.019, size = 96, normalized size = 1.2

$$\frac{1}{x^4}\left(6\,\frac{x^4}{\left(\ln\left(f\right)\right)^4b^4}\mathrm{e}^{\left(a+\frac{b}{x}\right)\ln(f)}-6\,\frac{x^3}{\left(\ln\left(f\right)\right)^3b^3}\mathrm{e}^{\left(a+\frac{b}{x}\right)\ln(f)}+3\,\frac{x^2}{\left(\ln\left(f\right)\right)^2b^2}\mathrm{e}^{\left(a+\frac{b}{x}\right)\ln(f)}-\frac{x}{b\ln\left(f\right)}\mathrm{e}^{\left(a+\frac{b}{x}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)/x^5,x)
```

```
[Out] (6/b^4/ln(f)^4*x^4*exp((a+b/x)*ln(f))-6/b^3/ln(f)^3*x^3*exp((a+b/
x)*ln(f))+3/b^2/ln(f)^2*x^2*exp((a+b/x)*ln(f))-1/b/ln(f)*x*exp((a
+b/x)*ln(f)))/x^4
```

Maxima [A] time = 0.838125, size = 28, normalized size = 0.34

$$\frac{f^a\,\Gamma\left(4,-\frac{b\log(f)}{x}\right)}{b^4\log\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^5,x, algorithm="maxima")
```

```
[Out] f^a*gamma(4, -b*log(f)/x)/(b^4*log(f)^4)
```

Fricas [A] time = 0.252607, size = 74, normalized size = 0.9

$$-\frac{\left(b^3\log\left(f\right)^3-3\,b^2x\log\left(f\right)^2+6\,bx^2\log\left(f\right)-6\,x^3\right)f^{\frac{ax+b}{x}}}{b^4x^3\log\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^5,x, algorithm="fricas")
```

```
[Out] -(b^3*log(f)^3 - 3*b^2*x*log(f)^2 + 6*b*x^2*log(f) - 6*x^3)*f^((a
*x + b)/x)/(b^4*x^3*log(f)^4)
```

Sympy [A] time = 0.315081, size = 53, normalized size = 0.65

$$\frac{f^{a+\frac{b}{x}}\left(-b^3\log\left(f\right)^3+3b^2x\log\left(f\right)^2-6bx^2\log\left(f\right)+6x^3\right)}{b^4x^3\log\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)/x**5,x)
```

```
[Out] f**(a + b/x)*(-b**3*log(f)**3 + 3*b**2*x*log(f)**2 - 6*b*x**2*log
(f) + 6*x**3)/(b**4*x**3*log(f)**4)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^5,x, algorithm="giac")

[Out] integrate(f^(a + b/x)/x^5, x)
```

3.126 $\int \frac{f^{a+\frac{b}{x}}}{x^6} \, dx$

Optimal. Leaf size=22

$$-\frac{f^a \text{Gamma}\left(5, -\frac{b \log(f)}{x}\right)}{b^5 \log^5(f)}$$

```
[Out] -((f^a*Gamma[5, -((b*Log[f])/x)])/(b^5*Log[f]^5))
```

Rubi [A] time = 0.0326069, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a \text{Gamma}\left(5, -\frac{b \log(f)}{x}\right)}{b^5 \log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)/x^6,x]

[Out] -((f^a*Gamma[5, -((b*Log[f])/x)])/(b^5*Log[f]^5))
```

Rubi in Sympy [A] time = 3.61068, size = 22, normalized size = 1.

$$-\frac{f^a \left(5, -\frac{b \log(f)}{x}\right)}{b^5 \log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)/x**6,x)

[Out] -f**a*Gamma(5, -b*log(f)/x)/(b**5*log(f)**5)
```

Mathematica [B] time = 0.0187145, size = 65, normalized size = 2.95

$$-\frac{f^{a+\frac{b}{x}} \left(b^4 \log^4(f) - 4 b^3 x \log^3(f) + 12 b^2 x^2 \log^2(f) - 24 b x^3 \log(f) + 24 x^4\right)}{b^5 x^4 \log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)/x^6,x]

[Out] -((f^(a + b/x)*(24*x^4 - 24*b*x^3*Log[f] + 12*b^2*x^2*Log[f]^2 -
4*b^3*x*Log[f]^3 + b^4*Log[f]^4))/(b^5*x^4*Log[f]^5))
```

Maple [A] time = 0.022, size = 119, normalized size = 5.4

$$\frac{1}{x^5} \left(-24 \frac{x^5}{(\ln(f))^5 b^5} e^{\left(a+\frac{b}{x}\right)\ln(f)} + 24 \frac{x^4}{(\ln(f))^4 b^4} e^{\left(a+\frac{b}{x}\right)\ln(f)} - 12 \frac{x^3}{(\ln(f))^3 b^3} e^{\left(a+\frac{b}{x}\right)\ln(f)} + 4 \frac{x^2}{(\ln(f))^2 b^2} e^{\left(a+\frac{b}{x}\right)\ln(f)} - \frac{x}{b\ln(f)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x)/x^6,x)
```

```
[Out] (-24/b^5/ln(f)^5*x^5*exp((a+b/x)*ln(f))+24/b^4/ln(f)^4*x^4*exp((a
+b/x)*ln(f))-12/b^3/ln(f)^3*x^3*exp((a+b/x)*ln(f))+4/b^2/ln(f)^2*
x^2*exp((a+b/x)*ln(f))-1/b/ln(f)*x*exp((a+b/x)*ln(f)))/x^5
```

Maxima [A] time = 0.812798, size = 30, normalized size = 1.36

$$-\frac{f^{a}\Gamma\left(5, -\frac{b\log(f)}{x}\right)}{b^{5}\log\left(f\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^6,x, algorithm="maxima")
```

```
[Out] -f^a*gamma(5, -b*log(f)/x)/(b^5*log(f)^5)
```

Fricas [A] time = 0.253189, size = 90, normalized size = 4.09

$$-\frac{\left(b^{4}\log\left(f\right)^{4} - 4\,b^{3}x\log\left(f\right)^{3} + 12\,b^{2}x^{2}\log\left(f\right)^{2} - 24\,bx^{3}\log\left(f\right) + 24\,x^{4}\right)f^{\frac{ax+b}{x}}}{b^{5}x^{4}\log\left(f\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^6,x, algorithm="fricas")
```

```
[Out] -(b^4*log(f)^4 - 4*b^3*x*log(f)^3 + 12*b^2*x^2*log(f)^2 - 24*b*x^
3*log(f) + 24*x^4)*f^((a*x + b)/x)/(b^5*x^4*log(f)^5)
```

Sympy [A] time = 0.402801, size = 66, normalized size = 3.

$$\frac{f^{a+\frac{b}{x}}\left(-b^{4}\log\left(f\right)^{4} + 4b^{3}x\log\left(f\right)^{3} - 12b^{2}x^{2}\log\left(f\right)^{2} + 24bx^{3}\log\left(f\right) - 24x^{4}\right)}{b^{5}x^{4}\log\left(f\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x)/x**6,x)
```

```
[Out] f**(a + b/x)*(-b**4*log(f)**4 + 4*b**3*x*log(f)**3 - 12*b**2*x**2
*log(f)**2 + 24*b*x**3*log(f) - 24*x**4)/(b**5*x**4*log(f)**5)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x}}}{x^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^6,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x)/x^6, x)
```

3.127 $\int \frac{f^{a+\frac{b}{x}}}{x^7}\,dx$

Optimal. Leaf size=21

$$\frac{f^a\text{Gamma}\left(6,-\frac{b\log(f)}{x}\right)}{b^6\log^6(f)}$$

```
[Out] (f^a*Gamma[6, -((b*Log[f])/x)])/(b^6*Log[f]^6)
```

Rubi [A] time = 0.0328264, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a\text{Gamma}\left(6,-\frac{b\log(f)}{x}\right)}{b^6\log^6(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x)/x^7,x]
```

```
[Out] (f^a*Gamma[6, -((b*Log[f])/x)])/(b^6*Log[f]^6)
```

Rubi in Sympy [A] time = 3.64393, size = 20, normalized size = 0.95

$$\frac{f^a\left(6,-\frac{b\log(f)}{x}\right)}{b^6\log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x)/x**7,x)
```

```
[Out] f**a*Gamma(6, -b*log(f)/x)/(b**6*log(f)**6)
```

Mathematica [B] time = 0.0214075, size = 77, normalized size = 3.67

$$\frac{f^{a+\frac{b}{x}}\left(-b^5\log^5(f)+5b^4x\log^4(f)-20b^3x^2\log^3(f)+60b^2x^3\log^2(f)-120bx^4\log(f)+120x^5\right)}{b^6x^5\log^6(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x)/x^7,x]
```

```
[Out] (f^(a + b/x)*(120*x^5 - 120*b*x^4*Log[f] + 60*b^2*x^3*Log[f]^2 -
20*b^3*x^2*Log[f]^3 + 5*b^4*x*Log[f]^4 - b^5*Log[f]^5))/(b^6*x^5*
Log[f]^6)
```

Maple [A] time = 0.023, size = 142, normalized size = 6.8

$$\frac{1}{x^6}\left(120\frac{x^6}{b^6(\ln(f))^6}e^{\left(a+\frac{b}{x}\right)\ln(f)}-120\frac{x^5}{(\ln(f))^5b^5}e^{\left(a+\frac{b}{x}\right)\ln(f)}+60\frac{x^4}{(\ln(f))^4b^4}e^{\left(a+\frac{b}{x}\right)\ln(f)}-20\frac{x^3}{(\ln(f))^3b^3}e^{\left(a+\frac{b}{x}\right)\ln(f)}+5\frac{}{(\ln(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x)/x^7,x)
```

```
[Out] (120/b^6/ln(f)^6*x^6*exp((a+b/x)*ln(f))-120/b^5/ln(f)^5*x^5*exp((
a+b/x)*ln(f))+60/b^4/ln(f)^4*x^4*exp((a+b/x)*ln(f))-20/b^3/ln(f)^
3*x^3*exp((a+b/x)*ln(f))+5/b^2/ln(f)^2*x^2*exp((a+b/x)*ln(f))-1/b
/ln(f)*x*exp((a+b/x)*ln(f)))/x^6
```

Maxima [A] time = 0.818557, size = 28, normalized size = 1.33

$$\frac{f^a \left(6, -\frac{b\log(f)}{x}\right)}{b^6 \log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)/x^7,x, algorithm="maxima")
```

```
[Out] f^a*gamma(6, -b*log(f)/x)/(b^6*log(f)^6)
```

Fricas [A] time = 0.25816, size = 107, normalized size = 5.1

$$-\frac{\left(b^5 \log\left(f\right)^5 - 5\,b^4 x \log\left(f\right)^4 + 20\,b^3 x^2 \log\left(f\right)^3 - 60\,b^2 x^3 \log\left(f\right)^2 + 120\,b x^4 \log\left(f\right) - 120\,x^5\right) f^{\frac{ax+b}{x}}}{b^6 x^5 \log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x)/x^7,x, algorithm="fricas")
```

```
[Out] -(b^5*log(f)^5 - 5*b^4*x*log(f)^4 + 20*b^3*x^2*log(f)^3 - 60*b^2*
x^3*log(f)^2 + 120*b*x^4*log(f) - 120*x^5)*f^((a*x + b)/x)/(b^6*x
^5*log(f)^6)
```

Sympy [A] time = 0.37927, size = 80, normalized size = 3.81

$$\frac{f^{a+\frac{b}{x}} \left(-b^5 \log\left(f\right)^5 + 5b^4 x \log\left(f\right)^4 - 20b^3 x^2 \log\left(f\right)^3 + 60b^2 x^3 \log\left(f\right)^2 - 120b x^4 \log\left(f\right) + 120x^5\right)}{b^6 x^5 \log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x)/x**7,x)
```

```
[Out] f**(a + b/x)*(-b**5*log(f)**5 + 5*b**4*x*log(f)**4 - 20*b**3*x**2
*log(f)**3 + 60*b**2*x**3*log(f)**2 - 120*b*x**4*log(f) + 120*x**
5)/(b**6*x**5*log(f)**6)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x)/x^7,x, algorithm="giac")

[Out] integrate(f^(a + b/x)/x^7, x)
```

3.128 $\int f^{a+\frac{b}{x^2}} x^m \, dx$

Optimal. Leaf size=46

$$\frac{1}{2} f^a x^{m+1} \left(-\frac{b \log(f)}{x^2}\right)^{\frac{m+1}{2}} \text{Gamma}\left(\frac{1}{2}(-m-1), -\frac{b \log(f)}{x^2}\right)$$

```
[Out] (f^a*x^(1 + m)*Gamma[(-1 - m)/2, -((b*Log[f])/x^2)]*(-((b*Log[f])
/x^2))^((1 + m)/2))/2
```

Rubi [A] time = 0.0390488, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{2} f^a x^{m+1} \left(-\frac{b \log(f)}{x^2}\right)^{\frac{m+1}{2}} \text{Gamma}\left(\frac{1}{2}(-m-1), -\frac{b \log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^m,x]
```

```
[Out] (f^a*x^(1 + m)*Gamma[(-1 - m)/2, -((b*Log[f])/x^2)]*(-((b*Log[f])
/x^2))^((1 + m)/2))/2
```

Rubi in Sympy [A] time = 3.38044, size = 44, normalized size = 0.96

$$\frac{f^a x^{m+1} \left(-\frac{b \log(f)}{x^2}\right)^{\frac{m}{2}+\frac{1}{2}} \left(-\frac{m}{2} - \frac{1}{2}, -\frac{b \log(f)}{x^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**m,x)
```

```
[Out] f**a*x**(m + 1)*(-b*log(f)/x**2)**(m/2 + 1/2)*Gamma(-m/2 - 1/2, -
b*log(f)/x**2)/2
```

Mathematica [A] time = 0.0257679, size = 46, normalized size = 1.

$$\frac{1}{2} f^a x^{m+1} \left(-\frac{b \log(f)}{x^2}\right)^{\frac{m+1}{2}} \text{Gamma}\left(\frac{1}{2}(-m-1), -\frac{b \log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^m,x]
```

```
[Out] (f^a*x^(1 + m)*Gamma[(-1 - m)/2, -((b*Log[f])/x^2)]*(-((b*Log[f])
/x^2))^((1 + m)/2))/2
```

Maple [B] time = 0.052, size = 169, normalized size = 3.7

$$-\frac{f^a}{2} (-b)^{\frac{m}{2}+\frac{1}{2}} (\ln(f))^{\frac{m}{2}+\frac{1}{2}} \left(2 \frac{x^{-1+m} (-b)^{-m/2-1/2} (\ln(f))^{1/2-m/2} b (1/2-m/2)}{1+m} \left(-\frac{b \ln(f)}{x^2}\right)^{-1/2+m/2} - 2 \frac{x^{1+m} (-b)^{-m/2-1/2}}{1+m}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x^m,x)
```

```
[Out] -1/2*f^a*(-b)^(1/2*m+1/2)*ln(f)^(1/2*m+1/2)*(2/(1+m)*x^(-1+m)*(-b
)^(-1/2*m-1/2)*ln(f)^(1/2-1/2*m)*b*(-b*ln(f)/x^2)^(-1/2+1/2*m)*GA
MMA(1/2-1/2*m)-2/(1+m)*x^(1+m)*(-b)^(-1/2*m-1/2)*ln(f)^(-1/2*m-1/
2)*exp(b*ln(f)/x^2)-2/(1+m)*x^(-1+m)*(-b)^(-1/2*m-1/2)*ln(f)^(1/2
-1/2*m)*b*(-b*ln(f)/x^2)^(-1/2+1/2*m)*GAMMA(1/2-1/2*m,-b*ln(f)/x^
2))
```

Maxima [A] time = 0.873785, size = 51, normalized size = 1.11

$$\frac{1}{2} f^a x^{m+1} \left(-\frac{b \log(f)}{x^2}\right)^{\frac{1}{2}m+\frac{1}{2}} \Gamma\left(-\frac{1}{2}m - \frac{1}{2}, -\frac{b \log(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^m,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*x^(m + 1)*(-b*log(f)/x^2)^(1/2*m + 1/2)*gamma(-1/2*m - 1/
2, -b*log(f)/x^2)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{\frac{ax^2+b}{x^2}} x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^((a*x^2 + b)/x^2)*x^m, x)
```

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

$$\int f^{a+\frac{b}{x^2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**m,x)
```

```
[Out] Integral(f**(a + b/x**2)*x**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^m, x)
```

3.129 $\int f^{a+\frac{b}{x^2}} x^9\,dx$

Optimal. Leaf size=24

$$-\frac{1}{2}b^5 f^a \log^5(f)\text{Gamma}\left(-5,-\frac{b\log(f)}{x^2}\right)$$

```
[Out] -(b^5*f^a*Gamma[-5, -((b*Log[f])/x^2)]*Log[f]^5)/2
```

Rubi [A] time = 0.039484, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{1}{2}b^5 f^a \log^5(f)\text{Gamma}\left(-5,-\frac{b\log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^9,x]

[Out] -(b^5*f^a*Gamma[-5, -((b*Log[f])/x^2)]*Log[f]^5)/2
```

Rubi in Sympy [A] time = 3.62792, size = 27, normalized size = 1.12

$$-\frac{b^5 f^a\left(-5,-\frac{b\log(f)}{x^2}\right)\log(f)^5}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**9,x)

[Out] -b**5*f**a*Gamma(-5, -b*log(f)/x**2)*log(f)**5/2
```

Mathematica [B] time = 0.0439682, size = 81, normalized size = 3.38

$$\frac{1}{240}f^a\left(x^2 f^{\frac{b}{x^2}}\left(b^4\log^4(f)+b^3x^2\log^3(f)+2b^2x^4\log^2(f)+6bx^6\log(f)+24x^8\right)\right.$$
$$\left.-b^5\log^5(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^9,x]

[Out] (f^a*(-(b^5*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]^5) + f^(b/x^2)*x
^2*(24*x^8 + 6*b*x^6*Log[f] + 2*b^2*x^4*Log[f]^2 + b^3*x^2*Log[f]
^3 + b^4*Log[f]^4)))/240
```

Maple [B] time = 0.039, size = 123, normalized size = 5.1

$$\frac{f^a x^{10}}{10}f^{\frac{b}{x^2}}+\frac{f^a\ln(f)bx^8}{40}f^{\frac{b}{x^2}}+\frac{f^a(\ln(f))^2b^2x^6}{120}f^{\frac{b}{x^2}}+\frac{f^a(\ln(f))^3b^3x^4}{240}f^{\frac{b}{x^2}}$$
$$+\frac{f^a(\ln(f))^4b^4x^2}{240}f^{\frac{b}{x^2}}+\frac{f^a(\ln(f))^5b^5}{240}Ei\left(1,-\frac{b\ln(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x^9,x)
```

```
[Out] 1/10*f^a*x^10*f^(b/x^2)+1/40*f^a*ln(f)*b*x^8*f^(b/x^2)+1/120*f^a*
ln(f)^2*b^2*x^6*f^(b/x^2)+1/240*f^a*ln(f)^3*b^3*x^4*f^(b/x^2)+1/2
40*f^a*ln(f)^4*b^4*x^2*f^(b/x^2)+1/240*f^a*ln(f)^5*b^5*Ei(1,-b*ln
(f)/x^2)
```

Maxima [A] time = 0.802582, size = 126, normalized size = 5.25

$$-\frac{1}{240}\,b^5 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^2}\right)\log(f)^5 + \frac{1}{240}\left(24\,f^a x^{10} + 6\,b f^a x^8\log(f) + 2\,b^2 f^a x^6\log(f)^2 + b^3 f^a x^4\log(f)^3 + b^4 f^a x^2\log(f)^4\right) f^{\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^9,x, algorithm="maxima")
```

```
[Out] -1/240*b^5*f^a*Ei(b*log(f)/x^2)*log(f)^5 + 1/240*(24*f^a*x^10 + 6
*b*f^a*x^8*log(f) + 2*b^2*f^a*x^6*log(f)^2 + b^3*f^a*x^4*log(f)^3
 + b^4*f^a*x^2*log(f)^4)*f^(b/x^2)
```

Fricas [A] time = 0.263752, size = 113, normalized size = 4.71

$$-\frac{1}{240}\,b^5 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^2}\right)\log(f)^5 + \frac{1}{240}\left(24\,x^{10} + 6\,b x^8\log(f) + 2\,b^2 x^6\log(f)^2 + b^3 x^4\log(f)^3 + b^4 x^2\log(f)^4\right) f^{\frac{ax^2+b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^9,x, algorithm="fricas")
```

```
[Out] -1/240*b^5*f^a*Ei(b*log(f)/x^2)*log(f)^5 + 1/240*(24*x^10 + 6*b*x
^8*log(f) + 2*b^2*x^6*log(f)^2 + b^3*x^4*log(f)^3 + b^4*x^2*log(f
)^4)*f^((a*x^2 + b)/x^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**9,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}} x^9\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^9,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^9, x)
```

3.130 $\int f^{a+\frac{b}{x^2}} x^7 \, dx$

Optimal. Leaf size=24

$$\frac{1}{2} b^4 f^a \log^4(f) \text{Gamma}\left(-4, -\frac{b \log(f)}{x^2}\right)$$

```
[Out] (b^4*f^a*Gamma[-4, -((b*Log[f])/x^2)]*Log[f]^4)/2
```

Rubi [A] time = 0.0410788, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{1}{2} b^4 f^a \log^4(f) \text{Gamma}\left(-4, -\frac{b \log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^7,x]

[Out] (b^4*f^a*Gamma[-4, -((b*Log[f])/x^2)]*Log[f]^4)/2
```

Rubi in Sympy [A] time = 3.59775, size = 26, normalized size = 1.08

$$\frac{b^4 f^a \left(-4, -\frac{b \log(f)}{x^2}\right) \log(f)^4}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**7,x)

[Out] b**4*f**a*Gamma(-4, -b*log(f)/x**2)*log(f)**4/2
```

Mathematica [B] time = 0.0360685, size = 69, normalized size = 2.88

$$\frac{1}{48} f^a \left(x^2 f^{\frac{b}{x^2}} \left(b^3 \log^3(f) + b^2 x^2 \log^2(f) + 2 b x^4 \log(f) + 6 x^6\right) - b^4 \log^4(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^7,x]

[Out] (f^a*(-(b^4*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]^4) + f^(b/x^2)*x
^2*(6*x^6 + 2*b*x^4*Log[f] + b^2*x^2*Log[f]^2 + b^3*Log[f]^3)))/4
8
```

Maple [B] time = 0.033, size = 101, normalized size = 4.2

$$\frac{f^a x^8}{8} f^{\frac{b}{x^2}} + \frac{f^a \ln(f) b x^6}{24} f^{\frac{b}{x^2}} + \frac{f^a (\ln(f))^2 b^2 x^4}{48} f^{\frac{b}{x^2}} + \frac{f^a (\ln(f))^3 b^3 x^2}{48} f^{\frac{b}{x^2}} + \frac{f^a (\ln(f))^4 b^4}{48} Ei\left(1, -\frac{b \ln(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x^7,x)
```

```
[Out] 1/8*f^a*x^8*f^(b/x^2)+1/24*f^a*ln(f)*b*x^6*f^(b/x^2)+1/48*f^a*ln(
f)^2*b^2*x^4*f^(b/x^2)+1/48*f^a*ln(f)^3*b^3*x^2*f^(b/x^2)+1/48*f^
a*ln(f)^4*b^4*Ei(1,-b*ln(f)/x^2)
```

Maxima [A] time = 0.81797, size = 105, normalized size = 4.38

$$-\frac{1}{48}\,b^4 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^2}\right)\log(f)^4+\frac{1}{48}\left(6\,f^a x^8+2\,bf^a x^6\log(f)+b^2 f^a x^4\log(f)^2+b^3 f^a x^2\log(f)^3\right)f^{\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^7,x, algorithm="maxima")
```

```
[Out] -1/48*b^4*f^a*Ei(b*log(f)/x^2)*log(f)^4 + 1/48*(6*f^a*x^8 + 2*b*f
^a*x^6*log(f) + b^2*f^a*x^4*log(f)^2 + b^3*f^a*x^2*log(f)^3)*f^(b
/x^2)
```

Fricas [A] time = 0.262961, size = 97, normalized size = 4.04

$$-\frac{1}{48}\,b^4 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^2}\right)\log(f)^4+\frac{1}{48}\left(6\,x^8+2\,bx^6\log(f)+b^2x^4\log(f)^2+b^3x^2\log(f)^3\right)f^{\frac{ax^2+b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^7,x, algorithm="fricas")
```

```
[Out] -1/48*b^4*f^a*Ei(b*log(f)/x^2)*log(f)^4 + 1/48*(6*x^8 + 2*b*x^6*l
og(f) + b^2*x^4*log(f)^2 + b^3*x^2*log(f)^3)*f^((a*x^2 + b)/x^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**7,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^7\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^7,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^7, x)
```

3.131 $\int f^{a+\frac{b}{x^2}} x^5 \, dx$

Optimal. Leaf size=81

$$-\frac{1}{12}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)+\frac{1}{12}b^2x^2\log^2(f)f^{a+\frac{b}{x^2}}+\frac{1}{6}x^6f^{a+\frac{b}{x^2}}+\frac{1}{12}bx^4\log(f)f^{a+\frac{b}{x^2}}$$

```
[Out] (f^(a + b/x^2)*x^6)/6 + (b*f^(a + b/x^2)*x^4*Log[f])/12 + (b^2*f^
(a + b/x^2)*x^2*Log[f]^2)/12 - (b^3*f^a*ExpIntegralEi[(b*Log[f])/
x^2]*Log[f]^3)/12
```

Rubi [A] time = 0.140675, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{1}{12}b^3 f^a \log^3(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)+\frac{1}{12}b^2x^2\log^2(f)f^{a+\frac{b}{x^2}}+\frac{1}{6}x^6f^{a+\frac{b}{x^2}}+\frac{1}{12}bx^4\log(f)f^{a+\frac{b}{x^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^5,x]
```

```
[Out] (f^(a + b/x^2)*x^6)/6 + (b*f^(a + b/x^2)*x^4*Log[f])/12 + (b^2*f^
(a + b/x^2)*x^2*Log[f]^2)/12 - (b^3*f^a*ExpIntegralEi[(b*Log[f])/
x^2]*Log[f]^3)/12
```

Rubi in Sympy [A] time = 11.5072, size = 76, normalized size = 0.94

$$-\frac{b^3 f^a \log(f)^3 \operatorname{Ei}\left(\frac{b\log(f)}{x^2}\right)}{12}+\frac{b^2 f^{a+\frac{b}{x^2}}x^2\log(f)^2}{12}+\frac{bf^{a+\frac{b}{x^2}}x^4\log(f)}{12}+\frac{f^{a+\frac{b}{x^2}}x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**5,x)
```

```
[Out] -b**3*f**a*log(f)**3*Ei(b*log(f)/x**2)/12 + b**2*f**(a + b/x**2)*
x**2*log(f)**2/12 + b*f**(a + b/x**2)*x**4*log(f)/12 + f**(a + b/
x**2)*x**6/6
```

Mathematica [A] time = 0.0298973, size = 57, normalized size = 0.7

$$\frac{1}{12}f^a\left(x^2f^{\frac{b}{x^2}}\left(b^2\log^2(f)+bx^2\log(f)+2x^4\right)-b^3\log^3(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^5,x]
```

```
[Out] (f^a*(-(b^3*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]^3) + f^(b/x^2)*x
^2*(2*x^4 + b*x^2*Log[f] + b^2*Log[f]^2)))/12
```

Maple [A] time = 0.028, size = 79, normalized size = 1.

$$\frac{f^a x^6}{6}f^{\frac{b}{x^2}}+\frac{f^a\ln(f)bx^4}{12}f^{\frac{b}{x^2}}+\frac{f^a(\ln(f))^2b^2x^2}{12}f^{\frac{b}{x^2}}+\frac{f^a(\ln(f))^3b^3}{12}Ei\left(1,-\frac{b\ln(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)*x^5,x)
```

```
[Out] 1/6*f^a*x^6*f^(b/x^2)+1/12*f^a*ln(f)*b*x^4*f^(b/x^2)+1/12*f^a*ln(
f)^2*b^2*x^2*f^(b/x^2)+1/12*f^a*ln(f)^3*b^3*Ei(1,-b*ln(f)/x^2)
```

Maxima [A]   time = 0.857789, size = 85, normalized size = 1.05

$$-\frac{1}{12}\,b^{3}f^{a}\mathrm{Ei}\left(\frac{b\log\left(f\right)}{x^{2}}\right)\log\left(f\right)^{3}+\frac{1}{12}\left(2\,f^{a}x^{6}+bf^{a}x^{4}\log\left(f\right)+b^{2}f^{a}x^{2}\log\left(f\right)^{2}\right)f^{\frac{b}{x^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^5,x, algorithm="maxima")
```

```
[Out] -1/12*b^3*f^a*Ei(b*log(f)/x^2)*log(f)^3 + 1/12*(2*f^a*x^6 + b*f^a
*x^4*log(f) + b^2*f^a*x^2*log(f)^2)*f^(b/x^2)
```

Fricas [A]   time = 0.255475, size = 81, normalized size = 1.

$$-\frac{1}{12}\,b^{3}f^{a}\mathrm{Ei}\left(\frac{b\log\left(f\right)}{x^{2}}\right)\log\left(f\right)^{3}+\frac{1}{12}\left(2\,x^{6}+bx^{4}\log\left(f\right)+b^{2}x^{2}\log\left(f\right)^{2}\right)f^{\frac{ax^{2}+b}{x^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^5,x, algorithm="fricas")
```

```
[Out] -1/12*b^3*f^a*Ei(b*log(f)/x^2)*log(f)^3 + 1/12*(2*x^6 + b*x^4*log
(f) + b^2*x^2*log(f)^2)*f^((a*x^2 + b)/x^2)
```

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

$$\int f^{a+\frac{b}{x^{2}}}x^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**2)*x**5,x)
```

```
[Out] Integral(f**(a + b/x**2)*x**5, x)
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^{2}}}x^{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^5,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^5, x)
```

3.132 $\int f^{a+\frac{b}{x^2}} x^3 \, dx$

Optimal. Leaf size=58

$$-\frac{1}{4}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)+\frac{1}{4}bx^2\log(f)f^{a+\frac{b}{x^2}}+\frac{1}{4}x^4 f^{a+\frac{b}{x^2}}$$

```
[Out] (f^(a + b/x^2)*x^4)/4 + (b*f^(a + b/x^2)*x^2*Log[f])/4 - (b^2*f^a
*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]^2)/4
```

Rubi [A] time = 0.0979302, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{1}{4}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)+\frac{1}{4}bx^2\log(f)f^{a+\frac{b}{x^2}}+\frac{1}{4}x^4 f^{a+\frac{b}{x^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^3,x]
```

```
[Out] (f^(a + b/x^2)*x^4)/4 + (b*f^(a + b/x^2)*x^2*Log[f])/4 - (b^2*f^a
*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]^2)/4
```

Rubi in Sympy [A] time = 7.83956, size = 54, normalized size = 0.93

$$-\frac{b^2 f^a \log(f)^2 \operatorname{Ei}\left(\frac{b\log(f)}{x^2}\right)}{4}+\frac{bf^{a+\frac{b}{x^2}}x^2\log(f)}{4}+\frac{f^{a+\frac{b}{x^2}}x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**3,x)
```

```
[Out] -b**2*f**a*log(f)**2*Ei(b*log(f)/x**2)/4 + b*f**(a + b/x**2)*x**2
*log(f)/4 + f**(a + b/x**2)*x**4/4
```

Mathematica [A] time = 0.023672, size = 44, normalized size = 0.76

$$\frac{1}{4}f^a\left(x^2 f^{\frac{b}{x^2}}\left(b\log(f)+x^2\right)-b^2\log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^3,x]
```

```
[Out] (f^a*(-(b^2*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]^2) + f^(b/x^2)*x
^2*(x^2 + b*Log[f])))/4
```

Maple [A] time = 0.026, size = 57, normalized size = 1.

$$\frac{f^a x^4}{4}f^{\frac{b}{x^2}}+\frac{f^a\ln(f)bx^2}{4}f^{\frac{b}{x^2}}+\frac{f^a(\ln(f))^2b^2}{4}Ei\left(1,-\frac{b\ln(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x^3,x)
```

```
[Out] 1/4*f^a*x^4*f^(b/x^2)+1/4*f^a*ln(f)*b*x^2*f^(b/x^2)+1/4*f^a*ln(f)
^2*b^2*Ei(1,-b*ln(f)/x^2)
```

Maxima [A] time = 0.829742, size = 65, normalized size = 1.12

$$-\frac{1}{4}\,b^2 f^a \mathrm{Ei}\left(\frac{b\log\left(f\right)}{x^2}\right)\log\left(f\right)^2+\frac{1}{4}\,\left(f^a x^4+b f^a x^2\log\left(f\right)\right)f^{\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^3,x, algorithm="maxima")
```

```
[Out] -1/4*b^2*f^a*Ei(b*log(f)/x^2)*log(f)^2 + 1/4*(f^a*x^4 + b*f^a*x^2
*log(f))*f^(b/x^2)
```

Fricas [A] time = 0.252494, size = 63, normalized size = 1.09

$$-\frac{1}{4}\,b^2 f^a \mathrm{Ei}\left(\frac{b\log\left(f\right)}{x^2}\right)\log\left(f\right)^2+\frac{1}{4}\,\left(x^4+b x^2\log\left(f\right)\right)f^{\frac{a x^2+b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^3,x, algorithm="fricas")
```

```
[Out] -1/4*b^2*f^a*Ei(b*log(f)/x^2)*log(f)^2 + 1/4*(x^4 + b*x^2*log(f))
*f^((a*x^2 + b)/x^2)
```

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

$$\int f^{a+\frac{b}{x^2}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**3,x)
```

```
[Out] Integral(f**(a + b/x**2)*x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^3, x)
```

3.133 $\int f^{a+\frac{b}{x^2}} x \, dx$

Optimal. Leaf size=35

$$\frac{1}{2}x^2 f^{a+\frac{b}{x^2}} - \frac{1}{2}bf^a \log(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)$$

```
[Out] (f^(a + b/x^2)*x^2)/2 - (b*f^a*ExpIntegralEi[(b*Log[f])/x^2]*Log[
f])/2
```

Rubi [A] time = 0.0579448, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{1}{2}x^2 f^{a+\frac{b}{x^2}} - \frac{1}{2}bf^a \log(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x,x]
```

```
[Out] (f^(a + b/x^2)*x^2)/2 - (b*f^a*ExpIntegralEi[(b*Log[f])/x^2]*Log[
f])/2
```

Rubi in Sympy [A] time = 4.6485, size = 32, normalized size = 0.91

$$-\frac{bf^a \log(f)\,\text{Ei}\left(\frac{b\log(f)}{x^2}\right)}{2} + \frac{f^{a+\frac{b}{x^2}}x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x,x)
```

```
[Out] -b*f**a*log(f)*Ei(b*log(f)/x**2)/2 + f**(a + b/x**2)*x**2/2
```

Mathematica [A] time = 0.00893553, size = 32, normalized size = 0.91

$$\frac{1}{2}f^a\left(x^2 f^{\frac{b}{x^2}} - b\log(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x,x]
```

```
[Out] (f^a*(f^(b/x^2)*x^2 - b*ExpIntegralEi[(b*Log[f])/x^2]*Log[f]))/2
```

Maple [A] time = 0.02, size = 35, normalized size = 1.

$$\frac{f^a x^2}{2} f^{\frac{b}{x^2}} + \frac{f^a \ln(f)\, b}{2} Ei\left(1, -\frac{b\ln(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x,x)

[Out] 1/2*f^a*x^2*f^(b/x^2)+1/2*f^a*ln(f)*b*Ei(1,-b*ln(f)/x^2)
```

Maxima [A] time = 0.842707, size = 43, normalized size = 1.23

$$\frac{1}{2} f^a f^{\frac{b}{x^2}} x^2 - \frac{1}{2} b f^a \mathrm{Ei}\left(\frac{b \log(f)}{x^2}\right) \log(f)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x,x, algorithm="maxima")

[Out] 1/2*f^a*f^(b/x^2)*x^2 - 1/2*b*f^a*Ei(b*log(f)/x^2)*log(f)
```

Fricas [A] time = 0.238268, size = 47, normalized size = 1.34

$$-\frac{1}{2} b f^a \mathrm{Ei}\left(\frac{b \log(f)}{x^2}\right) \log(f) + \frac{1}{2} f^{\frac{ax^2+b}{x^2}} x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x,x, algorithm="fricas")

[Out] -1/2*b*f^a*Ei(b*log(f)/x^2)*log(f) + 1/2*f^((a*x^2 + b)/x^2)*x^2
```

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

$$\int f^{a+\frac{b}{x^2}} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x,x)

[Out] Integral(f**(a + b/x**2)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x,x, algorithm="giac")

[Out] integrate(f^(a + b/x^2)*x, x)
```

3.134 $\int \frac{f^{a+\frac{b}{x^2}}}{x} \, dx$

Optimal. Leaf size=15

$$-\frac{1}{2} f^a \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^2}\right)$$

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x^2])/2
```

Rubi [A] time = 0.0352925, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{1}{2} f^a \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x,x]
```

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x^2])/2
```

Rubi in Sympy [A] time = 3.04652, size = 15, normalized size = 1.

$$-\frac{f^a \operatorname{Ei}\left(\frac{b \log(f)}{x^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x,x)
```

```
[Out] -f**a*Ei(b*log(f)/x**2)/2
```

Mathematica [A] time = 0.00447528, size = 15, normalized size = 1.

$$-\frac{1}{2} f^a \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x,x]
```

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x^2])/2
```

Maple [A] time = 0.019, size = 16, normalized size = 1.1

$$\frac{f^a}{2} Ei\left(1, -\frac{b \ln(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x,x)
```

```
[Out] 1/2*f^a*Ei(1,-b*ln(f)/x^2)
```

Maxima [A] time = 0.933301, size = 18, normalized size = 1.2

$$-\frac{1}{2} f^a \text{Ei}\left(\frac{b \log(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x,x, algorithm="maxima")
```

```
[Out] -1/2*f^a*Ei(b*log(f)/x^2)
```

Fricas [A] time = 0.244006, size = 18, normalized size = 1.2

$$-\frac{1}{2} f^a \text{Ei}\left(\frac{b \log(f)}{x^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x,x, algorithm="fricas")
```

```
[Out] -1/2*f^a*Ei(b*log(f)/x^2)
```

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

$$\int \frac{f^{a+\frac{b}{x^2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x,x)
```

```
[Out] Integral(f**(a + b/x**2)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x, x)
```

3.135 $\int \frac{f^{a+\frac{b}{x^2}}}{x^3} \, dx$

Optimal. Leaf size=20

$$-\frac{f^{a+\frac{b}{x^2}}}{2b\log(f)}$$

```
[Out] -f^(a + b/x^2)/(2*b*Log[f])
```

Rubi [A] time = 0.0355239, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^{a+\frac{b}{x^2}}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^3,x]

[Out] -f^(a + b/x^2)/(2*b*Log[f])
```

Rubi in Sympy [A] time = 3.43066, size = 15, normalized size = 0.75

$$-\frac{f^{a+\frac{b}{x^2}}}{2b\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**3,x)

[Out] -f**(a + b/x**2)/(2*b*log(f))
```

Mathematica [A] time = 0.00653181, size = 20, normalized size = 1.

$$-\frac{f^{a+\frac{b}{x^2}}}{2b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^3,x]

[Out] -f^(a + b/x^2)/(2*b*Log[f])
```

Maple [A] time = 0.003, size = 19, normalized size = 1.

$$-\frac{1}{2\,b\ln(f)}f^{a+\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^3,x)

[Out] -1/2*f^(a+b/x^2)/b/ln(f)
```

Maxima [A] time = 0.783617, size = 24, normalized size = 1.2

$$-\frac{f^{a+\frac{b}{x^2}}}{2\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^3,x, algorithm="maxima")

[Out] -1/2*f^(a + b/x^2)/(b*log(f))
```

Fricas [A] time = 0.235039, size = 30, normalized size = 1.5

$$-\frac{f^{\frac{ax^2+b}{x^2}}}{2\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^3,x, algorithm="fricas")

[Out] -1/2*f^((a*x^2 + b)/x^2)/(b*log(f))
```

Sympy [A] time = 0.215046, size = 29, normalized size = 1.45

$$\begin{cases} -\frac{f^{a+\frac{b}{x^2}}}{2b\log\left(f\right)} & \text{for}\: 2b\log\left(f\right) \neq 0 \\ -\frac{1}{2x^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**3,x)

[Out] Piecewise((-f**(a + b/x**2)/(2*b*log(f)), Ne(2*b*log(f), 0)), (-1
/(2*x**2), True))
```

GIAC/XCAS [A] time = 0.234351, size = 24, normalized size = 1.2

$$-\frac{f^{a+\frac{b}{x^2}}}{2\,b\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^3,x, algorithm="giac")

[Out] -1/2*f^(a + b/x^2)/(b*ln(f))
```

3.136 $\int \frac{f^{a+\frac{b}{x^2}}}{x^5} \, dx$

Optimal. Leaf size=44

$$\frac{f^{a+\frac{b}{x^2}}}{2b^2\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^2\log(f)}$$

```
[Out] f^(a + b/x^2)/(2*b^2*Log[f]^2) - f^(a + b/x^2)/(2*b*x^2*Log[f])
```

Rubi [A] time = 0.0729264, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{f^{a+\frac{b}{x^2}}}{2b^2\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^2\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^5,x]
```

```
[Out] f^(a + b/x^2)/(2*b^2*Log[f]^2) - f^(a + b/x^2)/(2*b*x^2*Log[f])
```

Rubi in Sympy [A] time = 6.78741, size = 36, normalized size = 0.82

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx^2\log{(f)}}+\frac{f^{a+\frac{b}{x^2}}}{2b^2\log{(f)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**5,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x**2*log(f)) + f**(a + b/x**2)/(2*b**2*log(
f)**2)
```

Mathematica [A] time = 0.0125069, size = 32, normalized size = 0.73

$$\frac{f^{a+\frac{b}{x^2}}\left(x^2-b\log(f)\right)}{2b^2x^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^5,x]
```

```
[Out] (f^(a + b/x^2)*(x^2 - b*Log[f]))/(2*b^2*x^2*Log[f]^2)
```

Maple [A] time = 0.017, size = 52, normalized size = 1.2

$$\frac{1}{x^4}\left(\frac{x^4}{2\,(\ln(f))^2\,b^2}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-\frac{x^2}{2\,b\ln(f)}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^5,x)
```

```
[Out] (1/2/b^2/ln(f)^2*x^4*exp((a+b/x^2)*ln(f))-1/2/b/ln(f)*x^2*exp((a+
b/x^2)*ln(f)))/x^4
```

Maxima [A] time = 0.863966, size = 30, normalized size = 0.68

$$\frac{f^a \left(2, -\frac{b \log(f)}{x^2}\right)}{2 \, b^2 \log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^5,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(2, -b*log(f)/x^2)/(b^2*log(f)^2)
```

Fricas [A] time = 0.242134, size = 46, normalized size = 1.05

$$\frac{\left(x^2 - b \log\left(f\right)\right) f^{\frac{a x^2 + b}{x^2}}}{2 \, b^2 x^2 \log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^5,x, algorithm="fricas")
```

```
[Out] 1/2*(x^2 - b*log(f))*f^((a*x^2 + b)/x^2)/(b^2*x^2*log(f)^2)
```

Sympy [A] time = 0.249709, size = 29, normalized size = 0.66

$$\frac{f^{a + \frac{b}{x^2}} \left(-b \log\left(f\right) + x^2\right)}{2b^2 x^2 \log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**5,x)
```

```
[Out] f**(a + b/x**2)*(-b*log(f) + x**2)/(2*b**2*x**2*log(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^5} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^5,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^5, x)
```

3.137 $\int \frac{f^{a+\frac{b}{x^2}}}{x^7}\,dx$

Optimal. Leaf size=62

$$-\frac{f^{a+\frac{b}{x^2}}}{b^3\log^3(f)}+\frac{f^{a+\frac{b}{x^2}}}{b^2x^2\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^4\log(f)}$$

```
[Out] -(f^(a + b/x^2)/(b^3*Log[f]^3)) + f^(a + b/x^2)/(b^2*x^2*Log[f]^2
) - f^(a + b/x^2)/(2*b*x^4*Log[f])
```

Rubi [A] time = 0.11128, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{f^{a+\frac{b}{x^2}}}{b^3\log^3(f)}+\frac{f^{a+\frac{b}{x^2}}}{b^2x^2\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^4\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^7,x]
```

```
[Out] -(f^(a + b/x^2)/(b^3*Log[f]^3)) + f^(a + b/x^2)/(b^2*x^2*Log[f]^2
) - f^(a + b/x^2)/(2*b*x^4*Log[f])
```

Rubi in Sympy [A] time = 11.5702, size = 54, normalized size = 0.87

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx^4\log(f)}+\frac{f^{a+\frac{b}{x^2}}}{b^2x^2\log(f)^2}-\frac{f^{a+\frac{b}{x^2}}}{b^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**7,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x**4*log(f)) + f**(a + b/x**2)/(b**2*x**2*l
og(f)**2) - f**(a + b/x**2)/(b**3*log(f)**3)
```

Mathematica [A] time = 0.0143682, size = 45, normalized size = 0.73

$$-\frac{f^{a+\frac{b}{x^2}}\left(b^2\log^2(f)-2bx^2\log(f)+2x^4\right)}{2b^3x^4\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^7,x]
```

```
[Out] -(f^(a + b/x^2)*(2*x^4 - 2*b*x^2*Log[f] + b^2*Log[f]^2))/(2*b^3*x
^4*Log[f]^3)
```

Maple [A] time = 0.022, size = 74, normalized size = 1.2

$$\frac{1}{x^6}\left(\frac{x^4}{(\ln(f))^2b^2}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-\frac{x^6}{(\ln(f))^3b^3}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-\frac{x^2}{2b\ln(f)}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)/x^7,x)
```

```
[Out] (1/b^2/ln(f)^2*x^4*exp((a+b/x^2)*ln(f))-1/b^3/ln(f)^3*x^6*exp((a+
b/x^2)*ln(f))-1/2/b/ln(f)*x^2*exp((a+b/x^2)*ln(f)))/x^6
```

Maxima [A] time = 0.871682, size = 30, normalized size = 0.48

$$-\frac{f^{a}\Gamma\left(3, -\frac{b \log(f)}{x^{2}}\right)}{2 \, b^{3} \log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/2*f^a*gamma(3, -b*log(f)/x^2)/(b^3*log(f)^3)
```

Fricas [A] time = 0.367223, size = 63, normalized size = 1.02

$$-\frac{\left(2 \, x^{4} - 2 \, b x^{2} \log\left(f\right) + b^{2} \log\left(f\right)^{2}\right) f^{\frac{a x^{2} + b}{x^{2}}}}{2 \, b^{3} x^{4} \log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/2*(2*x^4 - 2*b*x^2*log(f) + b^2*log(f)^2)*f^((a*x^2 + b)/x^2)/
(b^3*x^4*log(f)^3)
```

Sympy [A] time = 0.292547, size = 44, normalized size = 0.71

$$\frac{f^{a + \frac{b}{x^{2}}} \left(- b^{2} \log{\left(f \right)}^{2} + 2 b x^{2} \log{\left(f \right)} - 2 x^{4}\right)}{2 b^{3} x^{4} \log{\left(f \right)}^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**2)/x**7,x)
```

```
[Out] f**(a + b/x**2)*(-b**2*log(f)**2 + 2*b*x**2*log(f) - 2*x**4)/(2*b
**3*x**4*log(f)**3)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a + \frac{b}{x^{2}}}}{x^{7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^7,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^7, x)
```

3.138 $\int \frac{f^{a+\frac{b}{x^2}}}{x^9}\,dx$

Optimal. Leaf size=86

$$\frac{3f^{a+\frac{b}{x^2}}}{b^4\log^4(f)}-\frac{3f^{a+\frac{b}{x^2}}}{b^3x^2\log^3(f)}+\frac{3f^{a+\frac{b}{x^2}}}{2b^2x^4\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^6\log(f)}$$

```
[Out] (3*f^(a + b/x^2))/(b^4*Log[f]^4) - (3*f^(a + b/x^2))/(b^3*x^2*Log
[f]^3) + (3*f^(a + b/x^2))/(2*b^2*x^4*Log[f]^2) - f^(a + b/x^2)/(
2*b*x^6*Log[f])
```

Rubi [A] time = 0.153058, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{3f^{a+\frac{b}{x^2}}}{b^4\log^4(f)}-\frac{3f^{a+\frac{b}{x^2}}}{b^3x^2\log^3(f)}+\frac{3f^{a+\frac{b}{x^2}}}{2b^2x^4\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^6\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^9,x]
```

```
[Out] (3*f^(a + b/x^2))/(b^4*Log[f]^4) - (3*f^(a + b/x^2))/(b^3*x^2*Log
[f]^3) + (3*f^(a + b/x^2))/(2*b^2*x^4*Log[f]^2) - f^(a + b/x^2)/(
2*b*x^6*Log[f])
```

Rubi in Sympy [A] time = 16.8419, size = 82, normalized size = 0.95

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx^6\log(f)}+\frac{3f^{a+\frac{b}{x^2}}}{2b^2x^4\log(f)^2}-\frac{3f^{a+\frac{b}{x^2}}}{b^3x^2\log(f)^3}+\frac{3f^{a+\frac{b}{x^2}}}{b^4\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**9,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x**6*log(f)) + 3*f**(a + b/x**2)/(2*b**2*x*
*4*log(f)**2) - 3*f**(a + b/x**2)/(b**3*x**2*log(f)**3) + 3*f**(a
 + b/x**2)/(b**4*log(f)**4)
```

Mathematica [A] time = 0.0174247, size = 58, normalized size = 0.67

$$\frac{f^{a+\frac{b}{x^2}}\left(-b^3\log^3(f)+3b^2x^2\log^2(f)-6bx^4\log(f)+6x^6\right)}{2b^4x^6\log^4(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^9,x]
```

```
[Out] (f^(a + b/x^2)*(6*x^6 - 6*b*x^4*Log[f] + 3*b^2*x^2*Log[f]^2 - b^3
*Log[f]^3))/(2*b^4*x^6*Log[f]^4)
```

Maple [A] time = 0.026, size = 98, normalized size = 1.1

$$\frac{1}{x^8}\left(3\,\frac{x^8}{\left(\ln\left(f\right)\right)^4 b^4}\mathrm{e}^{\left(a+\frac{b}{x^2}\right)\ln(f)}-3\,\frac{x^6}{\left(\ln\left(f\right)\right)^3 b^3}\mathrm{e}^{\left(a+\frac{b}{x^2}\right)\ln(f)}+\frac{3\,x^4}{2\,\left(\ln\left(f\right)\right)^2 b^2}\mathrm{e}^{\left(a+\frac{b}{x^2}\right)\ln(f)}-\frac{x^2}{2\,b\ln\left(f\right)}\mathrm{e}^{\left(a+\frac{b}{x^2}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^9,x)
```

```
[Out] (3/b^4/ln(f)^4*x^8*exp((a+b/x^2)*ln(f))-3/b^3/ln(f)^3*x^6*exp((a+
b/x^2)*ln(f))+3/2/b^2/ln(f)^2*x^4*exp((a+b/x^2)*ln(f))-1/2/b/ln(f
)*x^2*exp((a+b/x^2)*ln(f)))/x^8
```

Maxima [A] time = 0.877681, size = 30, normalized size = 0.35

$$\frac{f^a\,\Gamma\left(4,-\frac{b\log(f)}{x^2}\right)}{2\,b^4\log\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^9,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(4, -b*log(f)/x^2)/(b^4*log(f)^4)
```

Fricas [A] time = 0.259874, size = 81, normalized size = 0.94

$$\frac{\left(6\,x^6-6\,bx^4\log\left(f\right)+3\,b^2x^2\log\left(f\right)^2-b^3\log\left(f\right)^3\right)f^{\frac{ax^2+b}{x^2}}}{2\,b^4x^6\log\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^9,x, algorithm="fricas")
```

```
[Out] 1/2*(6*x^6 - 6*b*x^4*log(f) + 3*b^2*x^2*log(f)^2 - b^3*log(f)^3)*
f^((a*x^2 + b)/x^2)/(b^4*x^6*log(f)^4)
```

Sympy [A] time = 0.317751, size = 58, normalized size = 0.67

$$\frac{f^{a+\frac{b}{x^2}}\left(-b^3\log\left(f\right)^3+3b^2x^2\log\left(f\right)^2-6bx^4\log\left(f\right)+6x^6\right)}{2b^4x^6\log\left(f\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**9,x)
```

```
[Out] f**(a + b/x**2)*(-b**3*log(f)**3 + 3*b**2*x**2*log(f)**2 - 6*b*x*
*4*log(f) + 6*x**6)/(2*b**4*x**6*log(f)**4)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x^2}}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^9,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^9, x)
```

3.139 $\int \frac{f^{a+\frac{b}{x^2}}}{x^{11}}\,dx$

Optimal. Leaf size=24

$$-\frac{f^a\text{Gamma}\left(5,-\frac{b\log(f)}{x^2}\right)}{2b^5\log^5(f)}$$

```
[Out] -(f^a*Gamma[5, -((b*Log[f])/x^2)])/(2*b^5*Log[f]^5)
```

Rubi [A] time = 0.0379426, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a\text{Gamma}\left(5,-\frac{b\log(f)}{x^2}\right)}{2b^5\log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^11,x]
```

```
[Out] -(f^a*Gamma[5, -((b*Log[f])/x^2)])/(2*b^5*Log[f]^5)
```

Rubi in Sympy [A] time = 3.65154, size = 26, normalized size = 1.08

$$-\frac{f^a\left(5,-\frac{b\log(f)}{x^2}\right)}{2b^5\log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**11,x)
```

```
[Out] -f**a*Gamma(5, -b*log(f)/x**2)/(2*b**5*log(f)**5)
```

Mathematica [B] time = 0.0192595, size = 69, normalized size = 2.88

$$-\frac{f^{a+\frac{b}{x^2}}\left(b^4\log^4(f)-4b^3x^2\log^3(f)+12b^2x^4\log^2(f)-24bx^6\log(f)+24x^8\right)}{2b^5x^8\log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^11,x]
```

```
[Out] -(f^(a + b/x^2)*(24*x^8 - 24*b*x^6*Log[f] + 12*b^2*x^4*Log[f]^2 -
  4*b^3*x^2*Log[f]^3 + b^4*Log[f]^4))/(2*b^5*x^8*Log[f]^5)
```

Maple [A] time = 0.029, size = 121, normalized size = 5.

$$\frac{1}{x^{10}}\left(-12\frac{x^{10}}{(\ln(f))^5b^5}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}+12\frac{x^8}{(\ln(f))^4b^4}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-6\frac{x^6}{(\ln(f))^3b^3}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}+2\frac{x^4}{(\ln(f))^2b^2}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-\frac{x}{2b\ln}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^11,x)
```

```
[Out] (-12/b^5/ln(f)^5*x^10*exp((a+b/x^2)*ln(f))+12/b^4/ln(f)^4*x^8*exp
((a+b/x^2)*ln(f))-6/b^3/ln(f)^3*x^6*exp((a+b/x^2)*ln(f))+2/b^2/ln
(f)^2*x^4*exp((a+b/x^2)*ln(f))-1/2/b/ln(f)*x^2*exp((a+b/x^2)*ln(f
)))/x^10
```

Maxima [A] time = 0.840192, size = 30, normalized size = 1.25

$$-\frac{f^a \left(5, -\frac{b \log(f)}{x^2}\right)}{2\, b^5 \log\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^11,x, algorithm="maxima")
```

```
[Out] -1/2*f^a*gamma(5, -b*log(f)/x^2)/(b^5*log(f)^5)
```

Fricas [A] time = 0.336834, size = 96, normalized size = 4.

$$-\frac{\left(24\, x^8 - 24\, b x^6 \log\left(f\right) + 12\, b^2 x^4 \log\left(f\right)^2 - 4\, b^3 x^2 \log\left(f\right)^3 + b^4 \log\left(f\right)^4\right) f^{\frac{a x^2+b}{x^2}}}{2\, b^5 x^8 \log\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^11,x, algorithm="fricas")
```

```
[Out] -1/2*(24*x^8 - 24*b*x^6*log(f) + 12*b^2*x^4*log(f)^2 - 4*b^3*x^2*
log(f)^3 + b^4*log(f)^4)*f^((a*x^2 + b)/x^2)/(b^5*x^8*log(f)^5)
```

Sympy [A] time = 0.366424, size = 71, normalized size = 2.96

$$\frac{f^{a+\frac{b}{x^2}} \left(-b^4 \log\left(f\right)^4 + 4b^3 x^2 \log\left(f\right)^3 - 12b^2 x^4 \log\left(f\right)^2 + 24b x^6 \log\left(f\right) - 24x^8\right)}{2b^5 x^8 \log\left(f\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**11,x)
```

```
[Out] f**(a + b/x**2)*(-b**4*log(f)**4 + 4*b**3*x**2*log(f)**3 - 12*b**
2*x**4*log(f)**2 + 24*b*x**6*log(f) - 24*x**8)/(2*b**5*x**8*log(f
)**5)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^{11}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^11,x, algorithm="giac")

[Out] integrate(f^(a + b/x^2)/x^11, x)
```

3.140 $\int \frac{f^{a+\frac{b}{x^2}}}{x^{13}}\,dx$

Optimal. Leaf size=24

$$\frac{f^a\text{Gamma}\left(6,-\frac{b\log(f)}{x^2}\right)}{2b^6\log^6(f)}$$

```
[Out] (f^a*Gamma[6, -((b*Log[f])/x^2)])/(2*b^6*Log[f]^6)
```

Rubi [A] time = 0.0382901, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a\text{Gamma}\left(6,-\frac{b\log(f)}{x^2}\right)}{2b^6\log^6(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^13,x]

[Out] (f^a*Gamma[6, -((b*Log[f])/x^2)])/(2*b^6*Log[f]^6)
```

Rubi in Sympy [A] time = 3.67103, size = 24, normalized size = 1.

$$\frac{f^a\left(6,-\frac{b\log(f)}{x^2}\right)}{2b^6\log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**13,x)

[Out] f**a*Gamma(6, -b*log(f)/x**2)/(2*b**6*log(f)**6)
```

Mathematica [B] time = 0.0231812, size = 82, normalized size = 3.42

$$\frac{f^{a+\frac{b}{x^2}}\left(-b^5\log^5(f)+5b^4x^2\log^4(f)-20b^3x^4\log^3(f)+60b^2x^6\log^2(f)-120bx^8\log(f)+120x^{10}\right)}{2b^6x^{10}\log^6(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^13,x]

[Out] (f^(a + b/x^2)*(120*x^10 - 120*b*x^8*Log[f] + 60*b^2*x^6*Log[f]^2
 - 20*b^3*x^4*Log[f]^3 + 5*b^4*x^2*Log[f]^4 - b^5*Log[f]^5))/(2*b
^6*x^10*Log[f]^6)
```

Maple [A] time = 0.036, size = 144, normalized size = 6.

$$\frac{1}{x^{12}}\left(60\frac{x^{12}}{b^6(\ln(f))^6}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-60\frac{x^{10}}{(\ln(f))^5b^5}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}+30\frac{x^8}{(\ln(f))^4b^4}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}-10\frac{x^6}{(\ln(f))^3b^3}e^{\left(a+\frac{b}{x^2}\right)\ln(f)}+\frac{}{2(l}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^13,x)
```

```
[Out] (60/b^6/ln(f)^6*x^12*exp((a+b/x^2)*ln(f))-60/b^5/ln(f)^5*x^10*exp
((a+b/x^2)*ln(f))+30/b^4/ln(f)^4*x^8*exp((a+b/x^2)*ln(f))-10/b^3/
ln(f)^3*x^6*exp((a+b/x^2)*ln(f))+5/2/b^2/ln(f)^2*x^4*exp((a+b/x^2
)*ln(f))-1/2/b/ln(f)*x^2*exp((a+b/x^2)*ln(f)))/x^12
```

Maxima [A] time = 0.977572, size = 30, normalized size = 1.25

$$\frac{f^a\left(6,-\frac{b\log(f)}{x^2}\right)}{2\,b^6\log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^13,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(6, -b*log(f)/x^2)/(b^6*log(f)^6)
```

Fricas [A] time = 0.320003, size = 113, normalized size = 4.71

$$\frac{\left(120\,x^{10}-120\,bx^8\log\left(f\right)+60\,b^2x^6\log\left(f\right)^2-20\,b^3x^4\log\left(f\right)^3+5\,b^4x^2\log\left(f\right)^4-b^5\log\left(f\right)^5\right)f^{\frac{ax^2+b}{x^2}}}{2\,b^6x^{10}\log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^13,x, algorithm="fricas")
```

```
[Out] 1/2*(120*x^10 - 120*b*x^8*log(f) + 60*b^2*x^6*log(f)^2 - 20*b^3*x
^4*log(f)^3 + 5*b^4*x^2*log(f)^4 - b^5*log(f)^5)*f^((a*x^2 + b)/x
^2)/(b^6*x^10*log(f)^6)
```

Sympy [A] time = 0.386292, size = 85, normalized size = 3.54

$$\frac{f^{a+\frac{b}{x^2}}\left(-b^5\log\left(f\right)^5+5b^4x^2\log\left(f\right)^4-20b^3x^4\log\left(f\right)^3+60b^2x^6\log\left(f\right)^2-120bx^8\log\left(f\right)+120x^{10}\right)}{2b^6x^{10}\log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**13,x)
```

```
[Out] f**(a + b/x**2)*(-b**5*log(f)**5 + 5*b**4*x**2*log(f)**4 - 20*b**
3*x**4*log(f)**3 + 60*b**2*x**6*log(f)**2 - 120*b*x**8*log(f) + 1
20*x**10)/(2*b**6*x**10*log(f)**6)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x^2}}}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^13,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^13, x)
```

3.141 $\int f^{a+\frac{b}{x^2}} x^{10}\, dx$

Optimal. Leaf size=34

$$\frac{1}{2}x^{11}f^a\left(-\frac{b\log(f)}{x^2}\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-\frac{b\log(f)}{x^2}\right)$$

```
[Out] (f^a*x^11*Gamma[-11/2, -((b*Log[f])/x^2)]*(-((b*Log[f])/x^2))^(11
/2))/2
```

Rubi [A] time = 0.0393777, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{2}x^{11}f^a\left(-\frac{b\log(f)}{x^2}\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-\frac{b\log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^10,x]
```

```
[Out] (f^a*x^11*Gamma[-11/2, -((b*Log[f])/x^2)]*(-((b*Log[f])/x^2))^(11
/2))/2
```

Rubi in Sympy [A] time = 3.19013, size = 36, normalized size = 1.06

$$\frac{f^a x^{11}\left(-\frac{b\log(f)}{x^2}\right)^{\frac{11}{2}}\left(-\frac{11}{2},-\frac{b\log(f)}{x^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**10,x)
```

```
[Out] f**a*x**11*(-b*log(f)/x**2)**(11/2)*Gamma(-11/2, -b*log(f)/x**2)/
2
```

Mathematica [B] time = 0.0782941, size = 110, normalized size = 3.24

$$\frac{f^a\left(xf^{\frac{b}{x^2}}\left(32b^5\log^5(f)+16b^4x^2\log^4(f)+24b^3x^4\log^3(f)+60b^2x^6\log^2(f)+210bx^8\log(f)+945x^{10}\right)-32\sqrt{\pi}b^{11/2}\log^{\frac{11}{2}}(\right.}{10395}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^10,x]
```

```
[Out] (f^a*(-32*b^(11/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]
^(11/2) + f^(b/x^2)*x*(945*x^10 + 210*b*x^8*Log[f] + 60*b^2*x^6*L
og[f]^2 + 24*b^3*x^4*Log[f]^3 + 16*b^4*x^2*Log[f]^4 + 32*b^5*Log[
f]^5)))/10395
```

Maple [A] time = 0.072, size = 155, normalized size = 4.6

$$\frac{f^{a}x^{11}}{11}f^{\frac{b}{x^{2}}}+\frac{2\,f^{a}\ln\left(f\right)bx^{9}}{99}f^{\frac{b}{x^{2}}}+\frac{4\,f^{a}\left(\ln\left(f\right)\right)^{2}b^{2}x^{7}}{693}f^{\frac{b}{x^{2}}}+\frac{8\,f^{a}\left(\ln\left(f\right)\right)^{3}b^{3}x^{5}}{3465}f^{\frac{b}{x^{2}}}+\frac{16\,f^{a}\left(\ln\left(f\right)\right)^{4}b^{4}x^{3}}{10395}f^{\frac{b}{x^{2}}}+\frac{32\,f^{a}\left(\ln\left(f\right)\right)^{5}b^{5}x}{10395}f^{\frac{b}{x^{2}}}-\frac{32\,f^{a}\left(\ln\left(f\right)\right)^{6}b^{6}\sqrt{\pi}}{10395}Erf\left(\frac{1}{x}\sqrt{-b\ln\left(f\right)}\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x^10,x)
```

```
[Out] 1/11*f^a*f^(b/x^2)*x^11+2/99*f^a*ln(f)*b*f^(b/x^2)*x^9+4/693*f^a*
ln(f)^2*b^2*f^(b/x^2)*x^7+8/3465*f^a*ln(f)^3*b^3*f^(b/x^2)*x^5+16
/10395*f^a*ln(f)^4*b^4*f^(b/x^2)*x^3+32/10395*f^a*ln(f)^5*b^5*f^(
b/x^2)*x-32/10395*f^a*ln(f)^6*b^6*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((
-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.986898, size = 174, normalized size = 5.12

$$-\frac{32\,\sqrt{\pi}b^{6}f^{a}\left(\operatorname{erf}\left(\sqrt{-\frac{b\log(f)}{x^{2}}}\right)-1\right)\log\left(f\right)^{6}}{10395\,x\sqrt{-\frac{b\log(f)}{x^{2}}}}+\frac{1}{10395}\left(945\,f^{a}x^{11}+210\,bf^{a}x^{9}\log\left(f\right)+60\,b^{2}f^{a}x^{7}\log\left(f\right)^{2}+24\,b^{3}f^{a}x^{5}\log\left(f\right)^{3}+16\,b^{4}f^{a}x^{3}\log\left(f\right)^{4}+32\,b^{5}f^{a}x\log\left(f\right)^{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^10,x, algorithm="maxima")
```

```
[Out] -32/10395*sqrt(pi)*b^6*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)*log(f)^
6/(x*sqrt(-b*log(f)/x^2)) + 1/10395*(945*f^a*x^11 + 210*b*f^a*x^9
*log(f) + 60*b^2*f^a*x^7*log(f)^2 + 24*b^3*f^a*x^5*log(f)^3 + 16*
b^4*f^a*x^3*log(f)^4 + 32*b^5*f^a*x*log(f)^5)*f^(b/x^2)
```

Fricas [A] time = 0.29887, size = 161, normalized size = 4.74

$$-\frac{32\,\sqrt{\pi}b^{6}f^{a}\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)\log\left(f\right)^{6}-\left(945\,x^{11}+210\,bx^{9}\log\left(f\right)+60\,b^{2}x^{7}\log\left(f\right)^{2}+24\,b^{3}x^{5}\log\left(f\right)^{3}+16\,b^{4}x^{3}\log\left(f\right)^{4}+3}{10395\,\sqrt{-b\log\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^10,x, algorithm="fricas")
```

```
[Out] -1/10395*(32*sqrt(pi)*b^6*f^a*erf(sqrt(-b*log(f))/x)*log(f)^6 - (
945*x^11 + 210*b*x^9*log(f) + 60*b^2*x^7*log(f)^2 + 24*b^3*x^5*lo
g(f)^3 + 16*b^4*x^3*log(f)^4 + 32*b^5*x*log(f)^5)*sqrt(-b*log(f))
*f^((a*x^2 + b)/x^2))/sqrt(-b*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^{10}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^10,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^10, x)
```

3.142 $\int f^{a+\frac{b}{x^2}} x^8 \, dx$

Optimal. Leaf size=34

$$\frac{1}{2} x^9 f^a \left(-\frac{b \log(f)}{x^2}\right)^{9/2} \text{Gamma}\left(-\frac{9}{2}, -\frac{b \log(f)}{x^2}\right)$$

```
[Out] (f^a*x^9*Gamma[-9/2, -((b*Log[f])/x^2)]*(-((b*Log[f])/x^2))^(9/2)
)/2
```

Rubi [A] time = 0.0385288, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{2} x^9 f^a \left(-\frac{b \log(f)}{x^2}\right)^{9/2} \text{Gamma}\left(-\frac{9}{2}, -\frac{b \log(f)}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b/x^2)*x^8,x]
```

```
[Out] (f^a*x^9*Gamma[-9/2, -((b*Log[f])/x^2)]*(-((b*Log[f])/x^2))^(9/2)
)/2
```

Rubi in Sympy [A] time = 3.23892, size = 36, normalized size = 1.06

$$\frac{f^a x^9 \left(-\frac{b \log(f)}{x^2}\right)^{\frac{9}{2}} \left(-\frac{9}{2}, -\frac{b \log(f)}{x^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b/x**2)*x**8,x)
```

```
[Out] f**a*x**9*(-b*log(f)/x**2)**(9/2)*Gamma(-9/2, -b*log(f)/x**2)/2
```

Mathematica [B] time = 0.0643937, size = 98, normalized size = 2.88

$$\frac{1}{945} f^a \left(x f^{\frac{b}{x^2}} \left(16 b^4 \log^4(f) + 8 b^3 x^2 \log^3(f) + 12 b^2 x^4 \log^2(f) + 30 b x^6 \log(f) + 105 x^8\right) - 16 \sqrt{\pi} b^{9/2} \log^{\frac{9}{2}}(f) \text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b/x^2)*x^8,x]
```

```
[Out] (f^a*(-16*b^(9/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]^
(9/2) + f^(b/x^2)*x*(105*x^8 + 30*b*x^6*Log[f] + 12*b^2*x^4*Log[f
]^2 + 8*b^3*x^2*Log[f]^3 + 16*b^4*Log[f]^4)))/945
```

Maple [A] time = 0.041, size = 133, normalized size = 3.9

$$\frac{f^a x^9}{9} f^{\frac{b}{x^2}} + \frac{2 f^a \ln(f) b x^7}{63} f^{\frac{b}{x^2}} + \frac{4 f^a (\ln(f))^2 b^2 x^5}{315} f^{\frac{b}{x^2}} + \frac{8 f^a (\ln(f))^3 b^3 x^3}{945} f^{\frac{b}{x^2}} + \frac{16 f^a (\ln(f))^4 b^4 x}{945} f^{\frac{b}{x^2}} - \frac{16 f^a (\ln(f))^5 b^5 \sqrt{\pi}}{945} Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right) \frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)*x^8,x)
```

```
[Out] 1/9*f^a*f^(b/x^2)*x^9+2/63*f^a*ln(f)*b*f^(b/x^2)*x^7+4/315*f^a*ln
(f)^2*b^2*f^(b/x^2)*x^5+8/945*f^a*ln(f)^3*b^3*f^(b/x^2)*x^3+16/94
5*f^a*ln(f)^4*b^4*f^(b/x^2)*x-16/945*f^a*ln(f)^5*b^5*Pi^(1/2)/(-b
*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.968771, size = 154, normalized size = 4.53

$$-\frac{16 \sqrt{\pi} b^5 f^a \left(\operatorname{erf}\left(\sqrt{-\frac{b \log(f)}{x^2}}\right) - 1\right) \log(f)^5}{945 x \sqrt{-\frac{b \log(f)}{x^2}}} + \frac{1}{945}\left(105 f^a x^9 + 30 b f^a x^7 \log(f) + 12 b^2 f^a x^5 \log(f)^2 + 8 b^3 f^a x^3 \log(f)^3 + 16 b^4 f^a x \log(f)^4\right) f^{\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^8,x, algorithm="maxima")
```

```
[Out] -16/945*sqrt(pi)*b^5*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)*log(f)^5/
(x*sqrt(-b*log(f)/x^2)) + 1/945*(105*f^a*x^9 + 30*b*f^a*x^7*log(f
) + 12*b^2*f^a*x^5*log(f)^2 + 8*b^3*f^a*x^3*log(f)^3 + 16*b^4*f^a
*x*log(f)^4)*f^(b/x^2)
```

Fricas [A] time = 0.284652, size = 144, normalized size = 4.24

$$-\frac{16 \sqrt{\pi} b^5 f^a \operatorname{erf}\left(\frac{\sqrt{-b \log(f)}}{x}\right) \log(f)^5 - \left(105 x^9 + 30 b x^7 \log(f) + 12 b^2 x^5 \log(f)^2 + 8 b^3 x^3 \log(f)^3 + 16 b^4 x \log(f)^4\right) \sqrt{-b \,\mathrm{lo}}}{945 \sqrt{-b \log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^8,x, algorithm="fricas")
```

```
[Out] -1/945*(16*sqrt(pi)*b^5*f^a*erf(sqrt(-b*log(f))/x)*log(f)^5 - (10
5*x^9 + 30*b*x^7*log(f) + 12*b^2*x^5*log(f)^2 + 8*b^3*x^3*log(f)^
3 + 16*b^4*x*log(f)^4)*sqrt(-b*log(f))*f^((a*x^2 + b)/x^2))/sqrt(
-b*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^8\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^8,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)*x^8, x)
```

3.143 $\int f^{a+\frac{b}{x^2}} x^6 \, dx$

Optimal. Leaf size=119

$$-\frac{8}{105}\sqrt{\pi}b^{7/2}f^a\log^{\frac{7}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+\frac{8}{105}b^3x\log^3(f)f^{a+\frac{b}{x^2}}+\frac{4}{105}b^2x^3\log^2(f)f^{a+\frac{b}{x^2}}+\frac{1}{7}x^7f^{a+\frac{b}{x^2}}+\frac{2}{35}bx^5\log(f)f^{a+\frac{b}{x^2}}$$

```
[Out] (f^(a + b/x^2)*x^7)/7 + (2*b*f^(a + b/x^2)*x^5*Log[f])/35 + (4*b^
2*f^(a + b/x^2)*x^3*Log[f]^2)/105 + (8*b^3*f^(a + b/x^2)*x*Log[f]
^3)/105 - (8*b^(7/2)*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*
Log[f]^(7/2))/105
```

Rubi [A] time = 0.193734, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{8}{105}\sqrt{\pi}b^{7/2}f^a\log^{\frac{7}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+\frac{8}{105}b^3x\log^3(f)f^{a+\frac{b}{x^2}}+\frac{4}{105}b^2x^3\log^2(f)f^{a+\frac{b}{x^2}}+\frac{1}{7}x^7f^{a+\frac{b}{x^2}}+\frac{2}{35}bx^5\log(f)f^{a+\frac{b}{x^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^6,x]
```

```
[Out] (f^(a + b/x^2)*x^7)/7 + (2*b*f^(a + b/x^2)*x^5*Log[f])/35 + (4*b^
2*f^(a + b/x^2)*x^3*Log[f]^2)/105 + (8*b^3*f^(a + b/x^2)*x*Log[f]
^3)/105 - (8*b^(7/2)*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*
Log[f]^(7/2))/105
```

Rubi in Sympy [A] time = 17.9099, size = 117, normalized size = 0.98

$$-\frac{8\sqrt{\pi}b^{\frac{7}{2}}f^a\log(f)^{\frac{7}{2}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{105}+\frac{8b^3f^{a+\frac{b}{x^2}}x\log(f)^3}{105}+\frac{4b^2f^{a+\frac{b}{x^2}}x^3\log(f)^2}{105}+\frac{2bf^{a+\frac{b}{x^2}}x^5\log(f)}{35}+\frac{f^{a+\frac{b}{x^2}}x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**6,x)
```

```
[Out] -8*sqrt(pi)*b**(7/2)*f**a*log(f)**(7/2)*erfi(sqrt(b)*sqrt(log(f))
/x)/105 + 8*b**3*f**(a + b/x**2)*x*log(f)**3/105 + 4*b**2*f**(a +
 b/x**2)*x**3*log(f)**2/105 + 2*b*f**(a + b/x**2)*x**5*log(f)/35
+ f**(a + b/x**2)*x**7/7
```

Mathematica [A] time = 0.0510242, size = 86, normalized size = 0.72

$$\frac{1}{105}f^a\left(xf^{\frac{b}{x^2}}\left(8b^3\log^3(f)+4b^2x^2\log^2(f)+6bx^4\log(f)+15x^6\right)-8\sqrt{\pi}b^{7/2}\log^{\frac{7}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]   Integrate[f^(a + b/x^2)*x^6,x]
```

```
[Out] (f^a*(-8*b^(7/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]^(
7/2) + f^(b/x^2)*x*(15*x^6 + 6*b*x^4*Log[f] + 4*b^2*x^2*Log[f]^2
+ 8*b^3*Log[f]^3)))/105
```

Maple [A] time = 0.036, size = 111, normalized size = 0.9

$$\frac{f^a x^7}{7} f^{\frac{b}{x^2}} + \frac{2 f^a \ln(f) b x^5}{35} f^{\frac{b}{x^2}} + \frac{4 f^a (\ln(f))^2 b^2 x^3}{105} f^{\frac{b}{x^2}} + \frac{8 f^a (\ln(f))^3 b^3 x}{105} f^{\frac{b}{x^2}} - \frac{8 f^a (\ln(f))^4 b^4 \sqrt{\pi}}{105} Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right) \frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)*x^6,x)
```

```
[Out] 1/7*f^a*f^(b/x^2)*x^7+2/35*f^a*ln(f)*b*f^(b/x^2)*x^5+4/105*f^a*ln
(f)^2*b^2*f^(b/x^2)*x^3+8/105*f^a*ln(f)^3*b^3*f^(b/x^2)*x-8/105*f
^a*ln(f)^4*b^4*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.831959, size = 134, normalized size = 1.13

$$-\frac{8\sqrt{\pi} b^4 f^a \left(\operatorname{erf}\left(\sqrt{-\frac{b\log(f)}{x^2}}\right) - 1\right) \log(f)^4}{105\, x\sqrt{-\frac{b\log(f)}{x^2}}} + \frac{1}{105}\left(15 f^a x^7 + 6 b f^a x^5 \log(f) + 4 b^2 f^a x^3 \log(f)^2 + 8 b^3 f^a x \log(f)^3\right) f^{\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^6,x, algorithm="maxima")
```

```
[Out] -8/105*sqrt(pi)*b^4*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)*log(f)^4/(
x*sqrt(-b*log(f)/x^2)) + 1/105*(15*f^a*x^7 + 6*b*f^a*x^5*log(f) +
 4*b^2*f^a*x^3*log(f)^2 + 8*b^3*f^a*x*log(f)^3)*f^(b/x^2)
```

Fricas [A] time = 0.265439, size = 128, normalized size = 1.08

$$-\frac{8\sqrt{\pi} b^4 f^a \operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right) \log(f)^4 - \left(15 x^7 + 6 b x^5 \log(f) + 4 b^2 x^3 \log(f)^2 + 8 b^3 x \log(f)^3\right)\sqrt{-b\log(f)} f^{\frac{ax^2+b}{x^2}}}{105\sqrt{-b\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^6,x, algorithm="fricas")
```

```
[Out] -1/105*(8*sqrt(pi)*b^4*f^a*erf(sqrt(-b*log(f))/x)*log(f)^4 - (15*
x^7 + 6*b*x^5*log(f) + 4*b^2*x^3*log(f)^2 + 8*b^3*x*log(f)^3)*sqr
t(-b*log(f))*f^((a*x^2 + b)/x^2))/sqrt(-b*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)*x**6,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^6\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^6,x, algorithm="giac")

[Out] integrate(f^(a + b/x^2)*x^6, x)
```

3.144 $\int f^{a+\frac{b}{x^2}} x^4 \, dx$

Optimal. Leaf size=96

$$-\frac{4}{15}\sqrt{\pi}b^{5/2}f^a\log^{\frac{5}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+\frac{4}{15}b^2x\log^2(f)f^{a+\frac{b}{x^2}}+\frac{1}{5}x^5f^{a+\frac{b}{x^2}}+\frac{2}{15}bx^3\log(f)f^{a+\frac{b}{x^2}}$$

```
[Out] (f^(a + b/x^2)*x^5)/5 + (2*b*f^(a + b/x^2)*x^3*Log[f])/15 + (4*b^
2*f^(a + b/x^2)*x*Log[f]^2)/15 - (4*b^(5/2)*f^a*Sqrt[Pi]*Erfi[(Sq
rt[b]*Sqrt[Log[f]])/x]*Log[f]^(5/2))/15
```

Rubi [A] time = 0.146236, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{4}{15}\sqrt{\pi}b^{5/2}f^a\log^{\frac{5}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+\frac{4}{15}b^2x\log^2(f)f^{a+\frac{b}{x^2}}+\frac{1}{5}x^5f^{a+\frac{b}{x^2}}+\frac{2}{15}bx^3\log(f)f^{a+\frac{b}{x^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^4,x]
```

```
[Out] (f^(a + b/x^2)*x^5)/5 + (2*b*f^(a + b/x^2)*x^3*Log[f])/15 + (4*b^
2*f^(a + b/x^2)*x*Log[f]^2)/15 - (4*b^(5/2)*f^a*Sqrt[Pi]*Erfi[(Sq
rt[b]*Sqrt[Log[f]])/x]*Log[f]^(5/2))/15
```

Rubi in Sympy [A] time = 12.9026, size = 94, normalized size = 0.98

$$-\frac{4\sqrt{\pi}b^{\frac{5}{2}}f^a\log(f)^{\frac{5}{2}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{15}+\frac{4b^2f^{a+\frac{b}{x^2}}x\log(f)^2}{15}+\frac{2bf^{a+\frac{b}{x^2}}x^3\log(f)}{15}+\frac{f^{a+\frac{b}{x^2}}x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**4,x)
```

```
[Out] -4*sqrt(pi)*b**(5/2)*f**a*log(f)**(5/2)*erfi(sqrt(b)*sqrt(log(f))
/x)/15 + 4*b**2*f**(a + b/x**2)*x*log(f)**2/15 + 2*b*f**(a + b/x*
*2)*x**3*log(f)/15 + f**(a + b/x**2)*x**5/5
```

Mathematica [A] time = 0.0443343, size = 74, normalized size = 0.77

$$\frac{1}{15}f^a\left(xf^{\frac{b}{x^2}}\left(4b^2\log^2(f)+2bx^2\log(f)+3x^4\right)-4\sqrt{\pi}b^{5/2}\log^{\frac{5}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^4,x]
```

```
[Out] (f^a*(-4*b^(5/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]^(
5/2) + f^(b/x^2)*x*(3*x^4 + 2*b*x^2*Log[f] + 4*b^2*Log[f]^2)))/15
```

Maple [A] time = 0.032, size = 89, normalized size = 0.9

$$\frac{f^{a}x^{5}}{5}f^{\frac{b}{x^{2}}}+\frac{2\,f^{a}\ln\left(f\right)bx^{3}}{15}f^{\frac{b}{x^{2}}}+\frac{4\,f^{a}\left(\ln\left(f\right)\right)^{2}b^{2}x}{15}f^{\frac{b}{x^{2}}}-\frac{4\,f^{a}\left(\ln\left(f\right)\right)^{3}b^{3}\sqrt{\pi}}{15}Erf\left(\frac{1}{x}\sqrt{-b\ln\left(f\right)}\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)*x^4,x)
```

```
[Out] 1/5*f^a*f^(b/x^2)*x^5+2/15*f^a*ln(f)*b*f^(b/x^2)*x^3+4/15*f^a*ln(
f)^2*b^2*f^(b/x^2)*x-4/15*f^a*ln(f)^3*b^3*Pi^(1/2)/(-b*ln(f))^(1/
2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.927673, size = 113, normalized size = 1.18

$$-\frac{4\,\sqrt{\pi}b^{3}f^{a}\left(\operatorname{erf}\left(\sqrt{-\frac{b\log(f)}{x^{2}}}\right)-1\right)\log\left(f\right)^{3}}{15\,x\sqrt{-\frac{b\log(f)}{x^{2}}}}+\frac{1}{15}\left(3\,f^{a}x^{5}+2\,bf^{a}x^{3}\log\left(f\right)+4\,b^{2}f^{a}x\log\left(f\right)^{2}\right)f^{\frac{b}{x^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -4/15*sqrt(pi)*b^3*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)*log(f)^3/(x
*sqrt(-b*log(f)/x^2)) + 1/15*(3*f^a*x^5 + 2*b*f^a*x^3*log(f) + 4*
b^2*f^a*x*log(f)^2)*f^(b/x^2)
```

Fricas [A] time = 0.319589, size = 112, normalized size = 1.17

$$-\frac{4\,\sqrt{\pi}b^{3}f^{a}\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)\log\left(f\right)^{3}-\left(3\,x^{5}+2\,bx^{3}\log\left(f\right)+4\,b^{2}x\log\left(f\right)^{2}\right)\sqrt{-b\log\left(f\right)}f^{\frac{ax^{2}+b}{x^{2}}}}{15\,\sqrt{-b\log\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/15*(4*sqrt(pi)*b^3*f^a*erf(sqrt(-b*log(f))/x)*log(f)^3 - (3*x^
5 + 2*b*x^3*log(f) + 4*b^2*x*log(f)^2)*sqrt(-b*log(f))*f^((a*x^2
+ b)/x^2))/sqrt(-b*log(f))
```

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

$$\int f^{a+\frac{b}{x^{2}}}x^{4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**2)*x**4,x)
```

```
[Out] Integral(f**(a + b/x**2)*x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(a + b/x^2)*x^4, x)
```

3.145 $\int f^{a+\frac{b}{x^2}} x^2 \, dx$

Optimal. Leaf size=73

$$-\frac{2}{3}\sqrt{\pi}b^{3/2}f^a\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+\frac{2}{3}bx\log(f)f^{a+\frac{b}{x^2}}+\frac{1}{3}x^3f^{a+\frac{b}{x^2}}$$

```
[Out] (f^(a + b/x^2)*x^3)/3 + (2*b*f^(a + b/x^2)*x*Log[f])/3 - (2*b^(3/
2)*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]^(3/2))/3
```

Rubi [A] time = 0.104748, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{2}{3}\sqrt{\pi}b^{3/2}f^a\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+\frac{2}{3}bx\log(f)f^{a+\frac{b}{x^2}}+\frac{1}{3}x^3f^{a+\frac{b}{x^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)*x^2,x]
```

```
[Out] (f^(a + b/x^2)*x^3)/3 + (2*b*f^(a + b/x^2)*x*Log[f])/3 - (2*b^(3/
2)*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]^(3/2))/3
```

Rubi in Sympy [A] time = 8.83937, size = 70, normalized size = 0.96

$$-\frac{2\sqrt{\pi}b^{\frac{3}{2}}f^a\log(f)^{\frac{3}{2}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{3}+\frac{2bf^{a+\frac{b}{x^2}}x\log(f)}{3}+\frac{f^{a+\frac{b}{x^2}}x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)*x**2,x)
```

```
[Out] -2*sqrt(pi)*b**(3/2)*f**a*log(f)**(3/2)*erfi(sqrt(b)*sqrt(log(f))
/x)/3 + 2*b*f**(a + b/x**2)*x*log(f)/3 + f**(a + b/x**2)*x**3/3
```

Mathematica [A] time = 0.0336177, size = 60, normalized size = 0.82

$$\frac{1}{3}f^a\left(xf^{\frac{b}{x^2}}\left(2b\log(f)+x^2\right)-2\sqrt{\pi}b^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)*x^2,x]
```

```
[Out] (f^a*(-2*b^(3/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x]*Log[f]^(
3/2) + f^(b/x^2)*x*(x^2 + 2*b*Log[f])))/3
```

Maple [A] time = 0.029, size = 67, normalized size = 0.9

$$\frac{f^ax^3}{3}f^{\frac{b}{x^2}}+\frac{2\,f^a\ln(f)\,bx}{3}f^{\frac{b}{x^2}}-\frac{2\,f^a\left(\ln(f)\right)^2b^2\sqrt{\pi}}{3}Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)*x^2,x)
```

```
[Out] 1/3*f^a*f^(b/x^2)*x^3+2/3*f^a*ln(f)*b*f^(b/x^2)*x-2/3*f^a*ln(f)^2
*b^2*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.880215, size = 92, normalized size = 1.26

$$-\frac{2\sqrt{\pi}b^2f^a\left(\operatorname{erf}\left(\sqrt{-\frac{b\log(f)}{x^2}}\right)-1\right)\log(f)^2}{3\,x\sqrt{-\frac{b\log(f)}{x^2}}}+\frac{1}{3}\left(f^ax^3+2\,bf^ax\log(f)\right)f^{\frac{b}{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^2,x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(pi)*b^2*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)*log(f)^2/(x*
sqrt(-b*log(f)/x^2)) + 1/3*(f^a*x^3 + 2*b*f^a*x*log(f))*f^(b/x^2)
```

Fricas [A] time = 0.318096, size = 93, normalized size = 1.27

$$-\frac{2\sqrt{\pi}b^2f^a\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)\log(f)^2-\left(x^3+2\,bx\log(f)\right)\sqrt{-b\log(f)}f^{\frac{ax^2+b}{x^2}}}{3\sqrt{-b\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)*x^2,x, algorithm="fricas")
```

```
[Out] -1/3*(2*sqrt(pi)*b^2*f^a*erf(sqrt(-b*log(f))/x)*log(f)^2 - (x^3 +
 2*b*x*log(f))*sqrt(-b*log(f))*f^((a*x^2 + b)/x^2))/sqrt(-b*log(f
))
```

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

$$\int f^{a+\frac{b}{x^2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**2)*x**2,x)
```

```
[Out] Integral(f**(a + b/x**2)*x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)*x^2,x, algorithm="giac")

[Out] integrate(f^(a + b/x^2)*x^2, x)
```

3.146 $\int f^{a+\frac{b}{x^2}}\,dx$

Optimal. Leaf size=49

$$x f^{a+\frac{b}{x^2}}-\sqrt{\pi}\sqrt{b} f^a \sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)$$

```
[Out] f^(a + b/x^2)*x - Sqrt[b]*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]]
)/x]*Sqrt[Log[f]]
```

Rubi [A] time = 0.0605577, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$x f^{a+\frac{b}{x^2}}-\sqrt{\pi}\sqrt{b} f^a \sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2),x]
```

```
[Out] f^(a + b/x^2)*x - Sqrt[b]*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]]
)/x]*Sqrt[Log[f]]
```

Rubi in Sympy [A] time = 5.37912, size = 44, normalized size = 0.9

$$-\sqrt{\pi}\sqrt{b} f^a \sqrt{\log(f)}\,\text{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)+f^{a+\frac{b}{x^2}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2),x)
```

```
[Out] -sqrt(pi)*sqrt(b)*f**a*sqrt(log(f))*erfi(sqrt(b)*sqrt(log(f))/x)
+ f**(a + b/x**2)*x
```

Mathematica [A] time = 0.0131193, size = 49, normalized size = 1.

$$x f^{a+\frac{b}{x^2}}-\sqrt{\pi}\sqrt{b} f^a \sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2),x]
```

```
[Out] f^(a + b/x^2)*x - Sqrt[b]*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]]
)/x]*Sqrt[Log[f]]
```

Maple [A] time = 0.021, size = 44, normalized size = 0.9

$$f^a f^{\frac{b}{x^2}} x - f^a \ln(f)\, b\sqrt{\pi} Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2),x)
```

```
[Out] f^a*f^(b/x^2)*x-f^a*ln(f)*b*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(
f))^(1/2)/x)
```

Maxima [A] time = 0.912201, size = 68, normalized size = 1.39

$$f^{a}f^{\frac{b}{x^{2}}}x-\frac{\sqrt{\pi}bf^{a}\left(\operatorname{erf}\left(\sqrt{-\frac{b\log(f)}{x^{2}}}\right)-1\right)\log(f)}{x\sqrt{-\frac{b\log(f)}{x^{2}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2),x, algorithm="maxima")
```

```
[Out] f^a*f^(b/x^2)*x - sqrt(pi)*b*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)*l
og(f)/(x*sqrt(-b*log(f)/x^2))
```

Fricas [A] time = 0.269228, size = 74, normalized size = 1.51

$$-\frac{\sqrt{\pi}bf^{a}\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)\log(f)-\sqrt{-b\log(f)}f^{\frac{ax^{2}+b}{x^{2}}}x}{\sqrt{-b\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2),x, algorithm="fricas")
```

```
[Out] -(sqrt(pi)*b*f^a*erf(sqrt(-b*log(f))/x)*log(f) - sqrt(-b*log(f))*
f^((a*x^2 + b)/x^2)*x)/sqrt(-b*log(f))
```

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

$$\int f^{a+\frac{b}{x^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2),x)
```

```
[Out] Integral(f**(a + b/x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2),x, algorithm="giac")

[Out] integrate(f^(a + b/x^2), x)
```

3.147 $\int \frac{f^{a+\frac{b}{x^2}}}{x^2}\,dx$

Optimal. Leaf size=39

$$-\frac{\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

```
[Out] -(f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(2*Sqrt[b]*Sqrt[Lo
g[f]])
```

Rubi [A] time = 0.0493667, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^2,x]
```

```
[Out] -(f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(2*Sqrt[b]*Sqrt[Lo
g[f]])
```

Rubi in Sympy [A] time = 4.10236, size = 37, normalized size = 0.95

$$-\frac{\sqrt{\pi}f^a\,\text{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**2,x)
```

```
[Out] -sqrt(pi)*f**a*erfi(sqrt(b)*sqrt(log(f))/x)/(2*sqrt(b)*sqrt(log(f
)))
```

Mathematica [A] time = 0.00768023, size = 39, normalized size = 1.

$$-\frac{\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{2\sqrt{b}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^2,x]
```

```
[Out] -(f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(2*Sqrt[b]*Sqrt[Lo
g[f]])
```

Maple [A] time = 0.025, size = 28, normalized size = 0.7

$$-\frac{\sqrt{\pi}\,f^{a}}{2}Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^2,x)
```

```
[Out] -1/2*f^a*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.912848, size = 46, normalized size = 1.18

$$-\frac{\sqrt{\pi}\,f^{a}\left(\operatorname{erf}\left(\sqrt{-\frac{b\log(f)}{x^{2}}}\right)-1\right)}{2\,x\sqrt{-\frac{b\log(f)}{x^{2}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^2,x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(pi)*f^a*(erf(sqrt(-b*log(f)/x^2)) - 1)/(x*sqrt(-b*log(f
)/x^2))
```

Fricas [A] time = 0.259158, size = 36, normalized size = 0.92

$$-\frac{\sqrt{\pi}\,f^{a}\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)}{2\sqrt{-b\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^2,x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(pi)*f^a*erf(sqrt(-b*log(f))/x)/sqrt(-b*log(f))
```

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

$$\int \frac{f^{a+\frac{b}{x^{2}}}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**2,x)
```

```
[Out] Integral(f**(a + b/x**2)/x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^{2}}}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^2, x)
```

3.148 $\int \frac{f^{a+\frac{b}{x^2}}}{x^4}\,dx$

Optimal. Leaf size=63

$$\frac{\sqrt{\pi} f^a \text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{4b^{3/2}\log^{\frac{3}{2}}(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx\log(f)}$$

```
[Out] (f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(4*b^(3/2)*Log[f]^(
3/2)) - f^(a + b/x^2)/(2*b*x*Log[f])
```

Rubi [A] time = 0.089361, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{\sqrt{\pi} f^a \text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{4b^{3/2}\log^{\frac{3}{2}}(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^4,x]
```

```
[Out] (f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(4*b^(3/2)*Log[f]^(
3/2)) - f^(a + b/x^2)/(2*b*x*Log[f])
```

Rubi in Sympy [A] time = 7.73544, size = 53, normalized size = 0.84

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx\log(f)}+\frac{\sqrt{\pi} f^a \operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{4b^{\frac{3}{2}}\log(f)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**4,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x*log(f)) + sqrt(pi)*f**a*erfi(sqrt(b)*sqrt
(log(f))/x)/(4*b**(3/2)*log(f)**(3/2))
```

Mathematica [A] time = 0.0284775, size = 63, normalized size = 1.

$$\frac{\sqrt{\pi} f^a \text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{4b^{3/2}\log^{\frac{3}{2}}(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^4,x]
```

```
[Out] (f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(4*b^(3/2)*Log[f]^(
3/2)) - f^(a + b/x^2)/(2*b*x*Log[f])
```

Maple [A] time = 0.035, size = 58, normalized size = 0.9

$$-\frac{f^{a}}{2\ln\left(f\right)bx}f^{\frac{b}{x^{2}}}+\frac{f^{a}\sqrt{\pi}}{4\,b\ln\left(f\right)}Erf\left(\frac{1}{x}\sqrt{-b\ln\left(f\right)}\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)/x^4,x)
```

```
[Out] -1/2*f^a/ln(f)/b/x*f^(b/x^2)+1/4*f^a/ln(f)/b*Pi^(1/2)/(-b*ln(f))^
(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.878573, size = 38, normalized size = 0.6

$$\frac{f^{a}\left(\frac{3}{2},-\frac{b\log(f)}{x^{2}}\right)}{2\,x^{3}\left(-\frac{b\log(f)}{x^{2}}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(3/2, -b*log(f)/x^2)/(x^3*(-b*log(f)/x^2)^(3/2))
```

Fricas [A] time = 0.244324, size = 84, normalized size = 1.33

$$\frac{\sqrt{\pi}f^{a}x\,\mathrm{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)-2\sqrt{-b\log\left(f\right)}f^{\frac{ax^{2}+b}{x^{2}}}}{4\sqrt{-b\log\left(f\right)}bx\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^4,x, algorithm="fricas")
```

```
[Out] 1/4*(sqrt(pi)*f^a*x*erf(sqrt(-b*log(f))/x) - 2*sqrt(-b*log(f))*f^
((a*x^2 + b)/x^2))/(sqrt(-b*log(f))*b*x*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**2)/x**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x^{2}}}}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^4,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^4, x)
```

3.149 $\int \frac{f^{a+\frac{b}{x^2}}}{x^6}\,dx$

Optimal. Leaf size=86

$$-\frac{3\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{8b^{5/2}\log^{\frac{5}{2}}(f)}+\frac{3f^{a+\frac{b}{x^2}}}{4b^2x\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^3\log(f)}$$

```
[Out] (-3*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(8*b^(5/2)*Log[f
]^(5/2)) + (3*f^(a + b/x^2))/(4*b^2*x*Log[f]^2) - f^(a + b/x^2)/(
2*b*x^3*Log[f])
```

Rubi [A] time = 0.132087, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{3\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{8b^{5/2}\log^{\frac{5}{2}}(f)}+\frac{3f^{a+\frac{b}{x^2}}}{4b^2x\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^3\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^6,x]
```

```
[Out] (-3*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(8*b^(5/2)*Log[f
]^(5/2)) + (3*f^(a + b/x^2))/(4*b^2*x*Log[f]^2) - f^(a + b/x^2)/(
2*b*x^3*Log[f])
```

Rubi in Sympy [A] time = 12.6779, size = 78, normalized size = 0.91

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx^3\log(f)}+\frac{3f^{a+\frac{b}{x^2}}}{4b^2x\log(f)^2}-\frac{3\sqrt{\pi}f^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{8b^{\frac{5}{2}}\log(f)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**6,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x**3*log(f)) + 3*f**(a + b/x**2)/(4*b**2*x*
log(f)**2) - 3*sqrt(pi)*f**a*erfi(sqrt(b)*sqrt(log(f))/x)/(8*b**(
5/2)*log(f)**(5/2))
```

Mathematica [A] time = 0.0795551, size = 74, normalized size = 0.86

$$\frac{f^{a+\frac{b}{x^2}}\left(3x^2-2b\log(f)\right)}{4b^2x^3\log^2(f)}-\frac{3\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{8b^{5/2}\log^{\frac{5}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^6,x]
```

```
[Out] (-3*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(8*b^(5/2)*Log[f
]^(5/2)) + (f^(a + b/x^2)*(3*x^2 - 2*b*Log[f]))/(4*b^2*x^3*Log[f]
```

```
^2)
```

Maple [A] time = 0.043, size = 80, normalized size = 0.9

$$-\frac{f^{a}}{2\,bx^{3}\ln\left(f\right)}f^{\frac{b}{x^{2}}}+\frac{3\,f^{a}}{4\,\left(\ln\left(f\right)\right)^{2}b^{2}x}f^{\frac{b}{x^{2}}}-\frac{3\,f^{a}\sqrt{\pi}}{8\,\left(\ln\left(f\right)\right)^{2}b^{2}}Erf\left(\frac{1}{x}\sqrt{-b\ln\left(f\right)}\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^6,x)
```

```
[Out] -1/2*f^a/ln(f)/b/x^3*f^(b/x^2)+3/4*f^a/ln(f)^2/b^2/x*f^(b/x^2)-3/
8*f^a/ln(f)^2/b^2*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/
x)
```

Maxima [A] time = 0.901625, size = 38, normalized size = 0.44

$$\frac{f^{a}\left(\frac{5}{2},-\frac{b\log(f)}{x^{2}}\right)}{2\,x^{5}\left(-\frac{b\log(f)}{x^{2}}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(5/2, -b*log(f)/x^2)/(x^5*(-b*log(f)/x^2)^(5/2))
```

Fricas [A] time = 0.265458, size = 103, normalized size = 1.2

$$-\frac{3\,\sqrt{\pi}f^{a}x^{3}\,\mathrm{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)-2\,\left(3\,x^{2}-2\,b\log\left(f\right)\right)\sqrt{-b\log\left(f\right)}f^{\frac{ax^{2}+b}{x^{2}}}}{8\,\sqrt{-b\log\left(f\right)}b^{2}x^{3}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^6,x, algorithm="fricas")
```

```
[Out] -1/8*(3*sqrt(pi)*f^a*x^3*erf(sqrt(-b*log(f))/x) - 2*(3*x^2 - 2*b*
log(f))*sqrt(-b*log(f))*f^((a*x^2 + b)/x^2))/(sqrt(-b*log(f))*b^2
*x^3*log(f)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^6,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^6, x)
```

3.150 $\int \frac{f^{a+\frac{b}{x^2}}}{x^8}\,dx$

Optimal. Leaf size=109

$$\frac{15\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{16b^{7/2}\log^{\frac{7}{2}}(f)}-\frac{15f^{a+\frac{b}{x^2}}}{8b^3x\log^3(f)}+\frac{5f^{a+\frac{b}{x^2}}}{4b^2x^3\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^5\log(f)}$$

```
[Out] (15*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(16*b^(7/2)*Log[
f]^(7/2)) - (15*f^(a + b/x^2))/(8*b^3*x*Log[f]^3) + (5*f^(a + b/x
^2))/(4*b^2*x^3*Log[f]^2) - f^(a + b/x^2)/(2*b*x^5*Log[f])
```

Rubi [A] time = 0.176319, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{15\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{16b^{7/2}\log^{\frac{7}{2}}(f)}-\frac{15f^{a+\frac{b}{x^2}}}{8b^3x\log^3(f)}+\frac{5f^{a+\frac{b}{x^2}}}{4b^2x^3\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^5\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^8,x]
```

```
[Out] (15*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(16*b^(7/2)*Log[
f]^(7/2)) - (15*f^(a + b/x^2))/(8*b^3*x*Log[f]^3) + (5*f^(a + b/x
^2))/(4*b^2*x^3*Log[f]^2) - f^(a + b/x^2)/(2*b*x^5*Log[f])
```

Rubi in Sympy [A] time = 18.5124, size = 102, normalized size = 0.94

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx^5\log(f)}+\frac{5f^{a+\frac{b}{x^2}}}{4b^2x^3\log(f)^2}-\frac{15f^{a+\frac{b}{x^2}}}{8b^3x\log(f)^3}+\frac{15\sqrt{\pi}f^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{16b^{\frac{7}{2}}\log(f)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**8,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x**5*log(f)) + 5*f**(a + b/x**2)/(4*b**2*x*
*3*log(f)**2) - 15*f**(a + b/x**2)/(8*b**3*x*log(f)**3) + 15*sqrt
(pi)*f**a*erfi(sqrt(b)*sqrt(log(f))/x)/(16*b**(7/2)*log(f)**(7/2)
)
```

Mathematica [A] time = 0.0836925, size = 86, normalized size = 0.79

$$\frac{15\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{16b^{7/2}\log^{\frac{7}{2}}(f)}-\frac{f^{a+\frac{b}{x^2}}\left(4b^2\log^2(f)-10bx^2\log(f)+15x^4\right)}{8b^3x^5\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^8,x]
```

```
[Out] (15*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(16*b^(7/2)*Log[
f]^(7/2)) - (f^(a + b/x^2)*(15*x^4 - 10*b*x^2*Log[f] + 4*b^2*Log[
f]^2))/(8*b^3*x^5*Log[f]^3)
```

Maple [A] time = 0.053, size = 102, normalized size = 0.9

$$-\frac{f^a}{2\,b\ln(f)\,x^5}f^{\frac{b}{x^2}}+\frac{5\,f^a}{4\,(\ln(f))^2\,b^2x^3}f^{\frac{b}{x^2}}-\frac{15\,f^a}{8\,(\ln(f))^3\,b^3x}f^{\frac{b}{x^2}}+\frac{15\,f^a\sqrt{\pi}}{16\,(\ln(f))^3\,b^3}Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^8,x)
```

```
[Out] -1/2*f^a/ln(f)/b/x^5*f^(b/x^2)+5/4*f^a/ln(f)^2/b^2/x^3*f^(b/x^2)-
15/8*f^a/ln(f)^3/b^3/x*f^(b/x^2)+15/16*f^a/ln(f)^3/b^3*Pi^(1/2)/(
-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.833839, size = 38, normalized size = 0.35

$$\frac{f^a\left(\frac{7}{2},-\frac{b\log(f)}{x^2}\right)}{2\,x^7\left(-\frac{b\log(f)}{x^2}\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(7/2, -b*log(f)/x^2)/(x^7*(-b*log(f)/x^2)^(7/2))
```

Fricas [A] time = 0.270645, size = 119, normalized size = 1.09

$$\frac{15\,\sqrt{\pi}f^ax^5\,\mathrm{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)-2\left(15\,x^4-10\,bx^2\log(f)+4\,b^2\log(f)^2\right)\sqrt{-b\log(f)}f^{\frac{ax^2+b}{x^2}}}{16\,\sqrt{-b\log(f)}b^3x^5\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^8,x, algorithm="fricas")
```

```
[Out] 1/16*(15*sqrt(pi)*f^a*x^5*erf(sqrt(-b*log(f))/x) - 2*(15*x^4 - 10
*b*x^2*log(f) + 4*b^2*log(f)^2)*sqrt(-b*log(f))*f^((a*x^2 + b)/x^
2))/(sqrt(-b*log(f))*b^3*x^5*log(f)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^8,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^8, x)
```

3.151 $\int \frac{f^{a+\frac{b}{x^2}}}{x^{10}}\,dx$

Optimal. Leaf size=132

$$-\frac{105\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{32b^{9/2}\log^{\frac{9}{2}}(f)}+\frac{105f^{a+\frac{b}{x^2}}}{16b^4x\log^4(f)}-\frac{35f^{a+\frac{b}{x^2}}}{8b^3x^3\log^3(f)}+\frac{7f^{a+\frac{b}{x^2}}}{4b^2x^5\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^7\log(f)}$$

```
[Out] (-105*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(32*b^(9/2)*Lo
g[f]^(9/2)) + (105*f^(a + b/x^2))/(16*b^4*x*Log[f]^4) - (35*f^(a
+ b/x^2))/(8*b^3*x^3*Log[f]^3) + (7*f^(a + b/x^2))/(4*b^2*x^5*Log
[f]^2) - f^(a + b/x^2)/(2*b*x^7*Log[f])
```

Rubi [A] time = 0.225015, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{105\sqrt{\pi}f^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{32b^{9/2}\log^{\frac{9}{2}}(f)}+\frac{105f^{a+\frac{b}{x^2}}}{16b^4x\log^4(f)}-\frac{35f^{a+\frac{b}{x^2}}}{8b^3x^3\log^3(f)}+\frac{7f^{a+\frac{b}{x^2}}}{4b^2x^5\log^2(f)}-\frac{f^{a+\frac{b}{x^2}}}{2bx^7\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^10,x]
```

```
[Out] (-105*f^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x])/(32*b^(9/2)*Lo
g[f]^(9/2)) + (105*f^(a + b/x^2))/(16*b^4*x*Log[f]^4) - (35*f^(a
+ b/x^2))/(8*b^3*x^3*Log[f]^3) + (7*f^(a + b/x^2))/(4*b^2*x^5*Log
[f]^2) - f^(a + b/x^2)/(2*b*x^7*Log[f])
```

Rubi in Sympy [A] time = 25.2915, size = 126, normalized size = 0.95

$$-\frac{f^{a+\frac{b}{x^2}}}{2bx^7\log(f)}+\frac{7f^{a+\frac{b}{x^2}}}{4b^2x^5\log(f)^2}-\frac{35f^{a+\frac{b}{x^2}}}{8b^3x^3\log(f)^3}+\frac{105f^{a+\frac{b}{x^2}}}{16b^4x\log(f)^4}-\frac{105\sqrt{\pi}f^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)}{32b^{\frac{9}{2}}\log(f)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**10,x)
```

```
[Out] -f**(a + b/x**2)/(2*b*x**7*log(f)) + 7*f**(a + b/x**2)/(4*b**2*x*
*5*log(f)**2) - 35*f**(a + b/x**2)/(8*b**3*x**3*log(f)**3) + 105*
f**(a + b/x**2)/(16*b**4*x*log(f)**4) - 105*sqrt(pi)*f**a*erfi(sq
rt(b)*sqrt(log(f))/x)/(32*b**(9/2)*log(f)**(9/2))
```

Mathematica [A] time = 0.132737, size = 100, normalized size = 0.76

$$\frac{f^a\left(\frac{2\sqrt{b}\sqrt{\log(f)}f^{\frac{b}{x^2}}\left(-8b^3\log^3(f)+28b^2x^2\log^2(f)-70bx^4\log(f)+105x^6\right)}{x^7}-105\sqrt{\pi}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)\right)}{32b^{9/2}\log^{\frac{9}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^10,x]
```

```
[Out] (f^a*(-105*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x] + (2*Sqrt[b]*f
^(b/x^2)*Sqrt[Log[f]]*(105*x^6 - 70*b*x^4*Log[f] + 28*b^2*x^2*Log
[f]^2 - 8*b^3*Log[f]^3))/x^7))/(32*b^(9/2)*Log[f]^(9/2))
```

Maple [A] time = 0.063, size = 124, normalized size = 0.9

$$-\frac{f^{a}}{2\,b\ln\left(f\right)x^{7}}f^{\frac{b}{x^{2}}}+\frac{7\,f^{a}}{4\,\left(\ln\left(f\right)\right)^{2}b^{2}x^{5}}f^{\frac{b}{x^{2}}}-\frac{35\,f^{a}}{8\,\left(\ln\left(f\right)\right)^{3}b^{3}x^{3}}f^{\frac{b}{x^{2}}}+\frac{105\,f^{a}}{16\,\left(\ln\left(f\right)\right)^{4}b^{4}x}f^{\frac{b}{x^{2}}}-\frac{105\,f^{a}\sqrt{\pi}}{32\,\left(\ln\left(f\right)\right)^{4}b^{4}}Erf\left(\frac{1}{x}\sqrt{-b\ln\left(f\right)}\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^10,x)
```

```
[Out] -1/2*f^a/ln(f)/b/x^7*f^(b/x^2)+7/4*f^a/ln(f)^2/b^2/x^5*f^(b/x^2)-
35/8*f^a/ln(f)^3/b^3/x^3*f^(b/x^2)+105/16*f^a/ln(f)^4/b^4/x*f^(b/
x^2)-105/32*f^a/ln(f)^4/b^4*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(
f))^(1/2)/x)
```

Maxima [A] time = 0.846342, size = 38, normalized size = 0.29

$$\frac{f^{a}\left(\frac{9}{2},-\frac{b\log(f)}{x^{2}}\right)}{2\,x^{9}\left(-\frac{b\log(f)}{x^{2}}\right)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^10,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(9/2, -b*log(f)/x^2)/(x^9*(-b*log(f)/x^2)^(9/2))
```

Fricas [A] time = 0.256445, size = 135, normalized size = 1.02

$$-\frac{105\,\sqrt{\pi}f^{a}x^{7}\,\mathrm{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)-2\left(105\,x^{6}-70\,bx^{4}\log\left(f\right)+28\,b^{2}x^{2}\log\left(f\right)^{2}-8\,b^{3}\log\left(f\right)^{3}\right)\sqrt{-b\log\left(f\right)}f^{\frac{ax^{2}+b}{x^{2}}}}{32\,\sqrt{-b\log\left(f\right)}b^{4}x^{7}\log\left(f\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^10,x, algorithm="fricas")
```

```
[Out] -1/32*(105*sqrt(pi)*f^a*x^7*erf(sqrt(-b*log(f))/x) - 2*(105*x^6 -
 70*b*x^4*log(f) + 28*b^2*x^2*log(f)^2 - 8*b^3*log(f)^3)*sqrt(-b*
log(f))*f^((a*x^2 + b)/x^2))/(sqrt(-b*log(f))*b^4*x^7*log(f)^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^10,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^10, x)
```

3.152 $\int \frac{f^{a+\frac{b}{x^2}}}{x^{12}}\,dx$

Optimal. Leaf size=34

$$\frac{f^a\text{Gamma}\left(\frac{11}{2},-\frac{b\log(f)}{x^2}\right)}{2x^{11}\left(-\frac{b\log(f)}{x^2}\right)^{11/2}}$$

```
[Out] (f^a*Gamma[11/2, -((b*Log[f])/x^2)])/(2*x^11*(-((b*Log[f])/x^2))^
(11/2))
```

Rubi [A] time = 0.0378495, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a\text{Gamma}\left(\frac{11}{2},-\frac{b\log(f)}{x^2}\right)}{2x^{11}\left(-\frac{b\log(f)}{x^2}\right)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^12,x]
```

```
[Out] (f^a*Gamma[11/2, -((b*Log[f])/x^2)])/(2*x^11*(-((b*Log[f])/x^2))^
(11/2))
```

Rubi in Sympy [A] time = 3.18876, size = 34, normalized size = 1.

$$\frac{f^a\left(\frac{11}{2},-\frac{b\log(f)}{x^2}\right)}{2x^{11}\left(-\frac{b\log(f)}{x^2}\right)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**12,x)
```

```
[Out] f**a*Gamma(11/2, -b*log(f)/x**2)/(2*x**11*(-b*log(f)/x**2)**(11/2
))
```

Mathematica [B] time = 0.100471, size = 112, normalized size = 3.29

$$\frac{f^a\left(945\sqrt{\pi}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)-\frac{2\sqrt{b}\sqrt{\log(f)}f^{\frac{b}{x^2}}\left(16b^4\log^4(f)-72b^3x^2\log^3(f)+252b^2x^4\log^2(f)-630bx^6\log(f)+945x^8\right)}{x^9}\right)}{64b^{11/2}\log^{\frac{11}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^12,x]
```

```
[Out] (f^a*(945*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x] - (2*Sqrt[b]*f^
(b/x^2)*Sqrt[Log[f]]*(945*x^8 - 630*b*x^6*Log[f] + 252*b^2*x^4*Lo
g[f]^2 - 72*b^3*x^2*Log[f]^3 + 16*b^4*Log[f]^4))/x^9))/(64*b^(11/
```

```
2)*Log[f]^(11/2))
```

Maple [A] time = 0.073, size = 146, normalized size = 4.3

$$-\frac{f^a}{2\,b\ln(f)\,x^9}f^{\frac{b}{x^2}}+\frac{9\,f^a}{4\,(\ln(f))^2\,b^2x^7}f^{\frac{b}{x^2}}-\frac{63\,f^a}{8\,(\ln(f))^3\,b^3x^5}f^{\frac{b}{x^2}}+\frac{315\,f^a}{16\,(\ln(f))^4\,b^4x^3}f^{\frac{b}{x^2}}-\frac{945\,f^a}{32\,(\ln(f))^5\,b^5x}f^{\frac{b}{x^2}}+\frac{945\,f^a\sqrt{\pi}}{64\,(\ln(f))^5\,b^5}Erf\left(\frac{1}{x}\sqrt{-b\ln(f)}\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^2)/x^12,x)
```

```
[Out] -1/2*f^a/ln(f)/b/x^9*f^(b/x^2)+9/4*f^a/ln(f)^2/b^2/x^7*f^(b/x^2)-
63/8*f^a/ln(f)^3/b^3/x^5*f^(b/x^2)+315/16*f^a/ln(f)^4/b^4/x^3*f^(
b/x^2)-945/32*f^a/ln(f)^5/b^5/x*f^(b/x^2)+945/64*f^a/ln(f)^5/b^5*
Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.911784, size = 38, normalized size = 1.12

$$\frac{f^a\left(\frac{11}{2},-\frac{b\log(f)}{x^2}\right)}{2\,x^{11}\left(-\frac{b\log(f)}{x^2}\right)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^12,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(11/2, -b*log(f)/x^2)/(x^11*(-b*log(f)/x^2)^(11/2))
```

Fricas [A] time = 0.269456, size = 151, normalized size = 4.44

$$\frac{945\,\sqrt{\pi}f^ax^9\,\mathrm{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)-2\left(945\,x^8-630\,bx^6\log(f)+252\,b^2x^4\log(f)^2-72\,b^3x^2\log(f)^3+16\,b^4\log(f)^4\right)\sqrt{-b\log(f}}{64\,\sqrt{-b\log(f)}b^5x^9\log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^2)/x^12,x, algorithm="fricas")
```

```
[Out] 1/64*(945*sqrt(pi)*f^a*x^9*erf(sqrt(-b*log(f))/x) - 2*(945*x^8 -
630*b*x^6*log(f) + 252*b^2*x^4*log(f)^2 - 72*b^3*x^2*log(f)^3 + 1
6*b^4*log(f)^4)*sqrt(-b*log(f))*f^((a*x^2 + b)/x^2))/(sqrt(-b*log
(f))*b^5*x^9*log(f)^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**2)/x**12,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^12,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^12, x)
```

3.153 $\int \frac{f^{a+\frac{b}{x^2}}}{x^{14}}\,dx$

Optimal. Leaf size=34

$$\frac{f^a \text{Gamma}\left(\frac{13}{2},-\frac{b\log(f)}{x^2}\right)}{2x^{13}\left(-\frac{b\log(f)}{x^2}\right)^{13/2}}$$

```
[Out] (f^a*Gamma[13/2, -((b*Log[f])/x^2)])/(2*x^13*(-((b*Log[f])/x^2))^
(13/2))
```

Rubi [A] time = 0.0377004, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a \text{Gamma}\left(\frac{13}{2},-\frac{b\log(f)}{x^2}\right)}{2x^{13}\left(-\frac{b\log(f)}{x^2}\right)^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^2)/x^14,x]
```

```
[Out] (f^a*Gamma[13/2, -((b*Log[f])/x^2)])/(2*x^13*(-((b*Log[f])/x^2))^
(13/2))
```

Rubi in Sympy [A] time = 3.24392, size = 34, normalized size = 1.

$$\frac{f^a\left(\frac{13}{2},-\frac{b\log(f)}{x^2}\right)}{2x^{13}\left(-\frac{b\log(f)}{x^2}\right)^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**2)/x**14,x)
```

```
[Out] f**a*Gamma(13/2, -b*log(f)/x**2)/(2*x**13*(-b*log(f)/x**2)**(13/2
))
```

Mathematica [B] time = 0.177477, size = 124, normalized size = 3.65

$$\frac{f^a\left(\frac{2\sqrt{b}\sqrt{\log(f)}f^{\frac{b}{x^2}}\left(-32b^5\log^5(f)+176b^4x^2\log^4(f)-792b^3x^4\log^3(f)+2772b^2x^6\log^2(f)-6930bx^8\log(f)+10395x^{10}\right)}{x^{11}}-10395\sqrt{\pi}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(f)}}{x}\right)\right)}{128b^{13/2}\log^{\frac{13}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^2)/x^14,x]
```

```
[Out] (f^a*(-10395*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[f]])/x] + (2*Sqrt[b]
*f^(b/x^2)*Sqrt[Log[f]]*(10395*x^10 - 6930*b*x^8*Log[f] + 2772*b^
2*x^6*Log[f]^2 - 792*b^3*x^4*Log[f]^3 + 176*b^4*x^2*Log[f]^4 - 32
```

```
*b^5*Log[f]^5))/x^11))/(128*b^(13/2)*Log[f]^(13/2))
```

Maple [A] time = 0.085, size = 168, normalized size = 4.9

$$-\frac{f^{a}}{2\,x^{11}\ln\left(f\right)b}f^{\frac{b}{x^{2}}}+\frac{11\,f^{a}}{4\,\left(\ln\left(f\right)\right)^{2}b^{2}x^{9}}f^{\frac{b}{x^{2}}}-\frac{99\,f^{a}}{8\,\left(\ln\left(f\right)\right)^{3}b^{3}x^{7}}f^{\frac{b}{x^{2}}}+\frac{693\,f^{a}}{16\,\left(\ln\left(f\right)\right)^{4}b^{4}x^{5}}f^{\frac{b}{x^{2}}}-\frac{3465\,f^{a}}{32\,\left(\ln\left(f\right)\right)^{5}b^{5}x^{3}}f^{\frac{b}{x^{2}}}+\frac{10395\,f^{a}}{64\,\left(\ln\left(f\right)\right)^{6}b^{6}x}f^{\frac{b}{x^{2}}}-\frac{10395\,f^{a}\sqrt{\pi}}{128\,\left(\ln\left(f\right)\right)^{6}b^{6}}{\it Erf}\left(\frac{1}{x}\sqrt{-b\ln\left(f\right)}\right)\frac{1}{\sqrt{-b\ln\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^2)/x^14,x)
```

```
[Out] -1/2*f^a*f^(b/x^2)/x^11/ln(f)/b+11/4*f^a/ln(f)^2/b^2/x^9*f^(b/x^2
)-99/8*f^a/ln(f)^3/b^3/x^7*f^(b/x^2)+693/16*f^a/ln(f)^4/b^4/x^5*f
^(b/x^2)-3465/32*f^a/ln(f)^5/b^5/x^3*f^(b/x^2)+10395/64*f^a/ln(f)
^6/b^6/x*f^(b/x^2)-10395/128*f^a/ln(f)^6/b^6*Pi^(1/2)/(-b*ln(f))^
(1/2)*erf((-b*ln(f))^(1/2)/x)
```

Maxima [A] time = 0.836601, size = 38, normalized size = 1.12

$$\frac{f^{a}\left(\frac{13}{2},-\frac{b\log(f)}{x^{2}}\right)}{2\,x^{13}\left(-\frac{b\log(f)}{x^{2}}\right)^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^14,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*gamma(13/2, -b*log(f)/x^2)/(x^13*(-b*log(f)/x^2)^(13/2))
```

Fricas [A] time = 0.252274, size = 167, normalized size = 4.91

$$-\frac{10395\,\sqrt{\pi}f^{a}x^{11}\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{x}\right)-2\left(10395\,x^{10}-6930\,bx^{8}\log\left(f\right)+2772\,b^{2}x^{6}\log\left(f\right)^{2}-792\,b^{3}x^{4}\log\left(f\right)^{3}+176\,b^{4}x^{2}\log\left(\right.\right.}{128\,\sqrt{-b\log\left(f\right)}b^{6}x^{11}\log\left(f\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^14,x, algorithm="fricas")
```

```
[Out] -1/128*(10395*sqrt(pi)*f^a*x^11*erf(sqrt(-b*log(f))/x) - 2*(10395
*x^10 - 6930*b*x^8*log(f) + 2772*b^2*x^6*log(f)^2 - 792*b^3*x^4*l
og(f)^3 + 176*b^4*x^2*log(f)^4 - 32*b^5*log(f)^5)*sqrt(-b*log(f))
*f^((a*x^2 + b)/x^2))/(sqrt(-b*log(f))*b^6*x^11*log(f)^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**2)/x**14,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^2}}}{x^{14}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^2)/x^14,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^2)/x^14, x)
```

3.154 $\int f^{a+\frac{b}{x^3}} x^m \, dx$

Optimal. Leaf size=46

$$\frac{1}{3} f^a x^{m+1} \left(-\frac{b\log(f)}{x^3}\right)^{\frac{m+1}{3}} \text{Gamma}\left(\frac{1}{3}(-m-1), -\frac{b\log(f)}{x^3}\right)$$

```
[Out] (f^a*x^(1 + m)*Gamma[(-1 - m)/3, -((b*Log[f])/x^3)]*(-((b*Log[f])
/x^3))^((1 + m)/3))/3
```

Rubi [A] time = 0.038526, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{3} f^a x^{m+1} \left(-\frac{b\log(f)}{x^3}\right)^{\frac{m+1}{3}} \text{Gamma}\left(\frac{1}{3}(-m-1), -\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b/x^3)*x^m,x]
```

```
[Out] (f^a*x^(1 + m)*Gamma[(-1 - m)/3, -((b*Log[f])/x^3)]*(-((b*Log[f])
/x^3))^((1 + m)/3))/3
```

Rubi in Sympy [A] time = 3.42777, size = 44, normalized size = 0.96

$$\frac{f^a x^{m+1} \left(-\frac{b\log(f)}{x^3}\right)^{\frac{m}{3}+\frac{1}{3}} \left(-\frac{m}{3}-\frac{1}{3}, -\frac{b\log(f)}{x^3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b/x**3)*x**m,x)
```

```
[Out] f**a*x**(m + 1)*(-b*log(f)/x**3)**(m/3 + 1/3)*Gamma(-m/3 - 1/3, -
b*log(f)/x**3)/3
```

Mathematica [A] time = 0.0262322, size = 46, normalized size = 1.

$$\frac{1}{3} f^a x^{m+1} \left(-\frac{b\log(f)}{x^3}\right)^{\frac{m+1}{3}} \text{Gamma}\left(\frac{1}{3}(-m-1), -\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b/x^3)*x^m,x]
```

```
[Out] (f^a*x^(1 + m)*Gamma[(-1 - m)/3, -((b*Log[f])/x^3)]*(-((b*Log[f])
/x^3))^((1 + m)/3))/3
```

Maple [B] time = 0.054, size = 169, normalized size = 3.7

$$-\frac{f^a}{3}(-b)^{\frac{1}{3}+\frac{m}{3}}(\ln(f))^{\frac{1}{3}+\frac{m}{3}}\left(3\frac{x^{-2+m}(-b)^{-m/3-1/3}(\ln(f))^{2/3-m/3}b(2/3-m/3)}{1+m}\left(-\frac{b\ln(f)}{x^3}\right)^{-2/3+m/3}-3\frac{x^{1+m}(-b)^{-m/3-1/3}}{1+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^m,x)
```

```
[Out] -1/3*f^a*(-b)^(1/3+1/3*m)*ln(f)^(1/3+1/3*m)*(3/(1+m)*x^(-2+m)*(-b
)^(-1/3*m-1/3)*ln(f)^(2/3-1/3*m)*b*(-b*ln(f)/x^3)^(-2/3+1/3*m)*GA
MMA(2/3-1/3*m)-3/(1+m)*x^(1+m)*(-b)^(-1/3*m-1/3)*ln(f)^(-1/3*m-1/
3)*exp(b*ln(f)/x^3)-3/(1+m)*x^(-2+m)*(-b)^(-1/3*m-1/3)*ln(f)^(2/3
-1/3*m)*b*(-b*ln(f)/x^3)^(-2/3+1/3*m)*GAMMA(2/3-1/3*m,-b*ln(f)/x^
3))
```

Maxima [A] time = 0.908003, size = 51, normalized size = 1.11

$$\frac{1}{3} f^{a} x^{m+1} \left(-\frac{b \log\left(f\right)}{x^{3}}\right)^{\frac{1}{3} m+\frac{1}{3}} \left(-\frac{1}{3} m - \frac{1}{3}, -\frac{b \log\left(f\right)}{x^{3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^m,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*x^(m + 1)*(-b*log(f)/x^3)^(1/3*m + 1/3)*gamma(-1/3*m - 1/
3, -b*log(f)/x^3)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{\frac{ax^{3}+b}{x^{3}}} x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^((a*x^3 + b)/x^3)*x^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^{3}}} x^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)*x^m, x)
```

3.155 $\int f^{a+\frac{b}{x^3}} x^{14} \, dx$

Optimal. Leaf size=24

$$-\frac{1}{3} b^5 f^a \log^5(f) \text{Gamma}\left(-5, -\frac{b \log(f)}{x^3}\right)$$

```
[Out] -(b^5*f^a*Gamma[-5, -((b*Log[f])/x^3)]*Log[f]^5)/3
```

Rubi [A] time = 0.039155, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{1}{3} b^5 f^a \log^5(f) \text{Gamma}\left(-5, -\frac{b \log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x^14,x]

[Out] -(b^5*f^a*Gamma[-5, -((b*Log[f])/x^3)]*Log[f]^5)/3
```

Rubi in Sympy [A] time = 3.59298, size = 27, normalized size = 1.12

$$-\frac{b^5 f^a \left(-5, -\frac{b \log(f)}{x^3}\right) \log(f)^5}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x**14,x)

[Out] -b**5*f**a*Gamma(-5, -b*log(f)/x**3)*log(f)**5/3
```

Mathematica [B] time = 0.0468186, size = 81, normalized size = 3.38

$$\frac{1}{360} f^a \left(x^3 f^{\frac{b}{x^3}} \left(b^4 \log^4(f) + b^3 x^3 \log^3(f) + 2b^2 x^6 \log^2(f) + 6bx^9 \log(f) + 24x^{12}\right) - b^5 \log^5(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x^14,x]

[Out] (f^a*(-(b^5*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]^5) + f^(b/x^3)*x
^3*(24*x^12 + 6*b*x^9*Log[f] + 2*b^2*x^6*Log[f]^2 + b^3*x^3*Log[f
]^3 + b^4*Log[f]^4)))/360
```

Maple [B] time = 0.065, size = 249, normalized size = 10.4

$$\frac{f^a b^5 (\ln(f))^5}{3} \left(\frac{x^{15}}{5 (\ln(f))^5 b^5} + \frac{x^{12}}{4 (\ln(f))^4 b^4} + \frac{x^9}{6 (\ln(f))^3 b^3} + \frac{x^6}{12 (\ln(f))^2 b^2} + \frac{x^3}{24 b \ln(f)} + \frac{137}{7200} + \frac{\ln(x)}{40} - \frac{\ln(-b)}{120} - \ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^14,x)
```

```
[Out] 1/3*f^a*b^5*ln(f)^5*(1/5*x^15/b^5/ln(f)^5+1/4*x^12/b^4/ln(f)^4+1/
6*x^9/b^3/ln(f)^3+1/12*x^6/b^2/ln(f)^2+1/24*x^3/b/ln(f)+137/7200+
1/40*ln(x)-1/120*ln(-b)-1/120*ln(ln(f))-1/7200/b^5/ln(f)^5*x^15*(
137*b^5*ln(f)^5/x^15+300*b^4*ln(f)^4/x^12+600*b^3*ln(f)^3/x^9+120
0*b^2*ln(f)^2/x^6+1800*b*ln(f)/x^3+1440)+1/720/b^5/ln(f)^5*x^15*(
6*b^4*ln(f)^4/x^12+6*b^3*ln(f)^3/x^9+12*b^2*ln(f)^2/x^6+36*b*ln(f
)/x^3+144)*exp(b*ln(f)/x^3)+1/120*ln(-b*ln(f)/x^3)+1/120*Ei(1,-b*
ln(f)/x^3))
```

Maxima [A] time = 0.957688, size = 126, normalized size = 5.25

$$-\frac{1}{360}\,b^5 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^3}\right)\log(f)^5 + \frac{1}{360}\left(24\,f^a x^{15} + 6\,b f^a x^{12}\log(f) + 2\,b^2 f^a x^9 \log(f)^2 + b^3 f^a x^6 \log(f)^3 + b^4 f^a x^3 \log(f)^4\right) f^{\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^14,x, algorithm="maxima")
```

```
[Out] -1/360*b^5*f^a*Ei(b*log(f)/x^3)*log(f)^5 + 1/360*(24*f^a*x^15 + 6
*b*f^a*x^12*log(f) + 2*b^2*f^a*x^9*log(f)^2 + b^3*f^a*x^6*log(f)^
3 + b^4*f^a*x^3*log(f)^4)*f^(b/x^3)
```

Fricas [A] time = 0.262329, size = 113, normalized size = 4.71

$$-\frac{1}{360}\,b^5 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^3}\right)\log(f)^5 + \frac{1}{360}\left(24\,x^{15} + 6\,b x^{12}\log(f) + 2\,b^2 x^9 \log(f)^2 + b^3 x^6 \log(f)^3 + b^4 x^3 \log(f)^4\right) f^{\frac{a x^3+b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^14,x, algorithm="fricas")
```

```
[Out] -1/360*b^5*f^a*Ei(b*log(f)/x^3)*log(f)^5 + 1/360*(24*x^15 + 6*b*x
^12*log(f) + 2*b^2*x^9*log(f)^2 + b^3*x^6*log(f)^3 + b^4*x^3*log(
f)^4)*f^((a*x^3 + b)/x^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**14,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^3}} x^{14}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^14,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)*x^14, x)
```

3.156 $\int f^{a+\frac{b}{x^3}} x^{11}\, dx$

Optimal. Leaf size=24

$$\frac{1}{3} b^4 f^a \log^4(f) \text{Gamma}\left(-4,-\frac{b \log(f)}{x^3}\right)$$

```
[Out] (b^4*f^a*Gamma[-4, -((b*Log[f])/x^3)]*Log[f]^4)/3
```

Rubi [A] time = 0.0401908, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{3} b^4 f^a \log^4(f) \text{Gamma}\left(-4,-\frac{b \log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b/x^3)*x^11,x]
```

```
[Out] (b^4*f^a*Gamma[-4, -((b*Log[f])/x^3)]*Log[f]^4)/3
```

Rubi in Sympy [A] time = 3.61727, size = 26, normalized size = 1.08

$$\frac{b^4 f^a \left(-4,-\frac{b \log(f)}{x^3}\right) \log(f)^4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b/x**3)*x**11,x)
```

```
[Out] b**4*f**a*Gamma(-4, -b*log(f)/x**3)*log(f)**4/3
```

Mathematica [B] time = 0.0430659, size = 69, normalized size = 2.88

$$\frac{1}{72} f^a \left(x^3 f^{\frac{b}{x^3}} \left(b^3 \log^3(f)+b^2 x^3 \log^2(f)+2 b x^6 \log(f)+6 x^9\right)-b^4 \log^4(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b/x^3)*x^11,x]
```

```
[Out] (f^a*(-(b^4*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]^4) + f^(b/x^3)*x
^3*(6*x^9 + 2*b*x^6*Log[f] + b^2*x^3*Log[f]^2 + b^3*Log[f]^3)))/7
2
```

Maple [B] time = 0.054, size = 213, normalized size = 8.9

$$-\frac{f^a b^4 (\ln(f))^4}{3} \left(-\frac{x^{12}}{4 (\ln(f))^4 b^4}-\frac{x^9}{3 (\ln(f))^3 b^3}-\frac{x^6}{4 (\ln(f))^2 b^2}-\frac{x^3}{6 b \ln(f)}-\frac{25}{288}-\frac{\ln(x)}{8}+\frac{\ln(-b)}{24}+\frac{\ln(\ln(f))}{24}+\frac{}{1440}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^11,x)
```

```
[Out] -1/3*f^a*b^4*ln(f)^4*(-1/4*x^12/b^4/ln(f)^4-1/3*x^9/b^3/ln(f)^3-1
/4*x^6/b^2/ln(f)^2-1/6*x^3/b/ln(f)-25/288-1/8*ln(x)+1/24*ln(-b)+1
/24*ln(ln(f))+1/1440/b^4/ln(f)^4*x^12*(125*b^4*ln(f)^4/x^12+240*b
^3*ln(f)^3/x^9+360*b^2*ln(f)^2/x^6+480*b*ln(f)/x^3+360)-1/120/b^4
/ln(f)^4*x^12*(5*b^3*ln(f)^3/x^9+5*b^2*ln(f)^2/x^6+10*b*ln(f)/x^3
+30)*exp(b*ln(f)/x^3)-1/24*ln(-b*ln(f)/x^3)-1/24*Ei(1,-b*ln(f)/x^
3))
```

Maxima [A] time = 0.842298, size = 105, normalized size = 4.38

$$-\frac{1}{72}\,b^4 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^3}\right)\log(f)^4+\frac{1}{72}\left(6\,f^a x^{12}+2\,bf^a x^9\log(f)+b^2 f^a x^6\log(f)^2+b^3 f^a x^3\log(f)^3\right)f^{\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^11,x, algorithm="maxima")
```

```
[Out] -1/72*b^4*f^a*Ei(b*log(f)/x^3)*log(f)^4 + 1/72*(6*f^a*x^12 + 2*b*
f^a*x^9*log(f) + b^2*f^a*x^6*log(f)^2 + b^3*f^a*x^3*log(f)^3)*f^(
b/x^3)
```

Fricas [A] time = 0.278143, size = 97, normalized size = 4.04

$$-\frac{1}{72}\,b^4 f^a \mathrm{Ei}\left(\frac{b\log(f)}{x^3}\right)\log(f)^4+\frac{1}{72}\left(6\,x^{12}+2\,bx^9\log(f)+b^2x^6\log(f)^2+b^3x^3\log(f)^3\right)f^{\frac{ax^3+b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^11,x, algorithm="fricas")
```

```
[Out] -1/72*b^4*f^a*Ei(b*log(f)/x^3)*log(f)^4 + 1/72*(6*x^12 + 2*b*x^9*
log(f) + b^2*x^6*log(f)^2 + b^3*x^3*log(f)^3)*f^((a*x^3 + b)/x^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**11,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^3}}x^{11}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^11,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)*x^11, x)
```

3.157 $\int f^{a+\frac{b}{x^3}} x^8 \, dx$

Optimal. Leaf size=81

$$-\frac{1}{18} b^3 f^a \log^3(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)+\frac{1}{18} b^2 x^3 \log^2(f) f^{a+\frac{b}{x^3}}+\frac{1}{9} x^9 f^{a+\frac{b}{x^3}}+\frac{1}{18} b x^6 \log(f) f^{a+\frac{b}{x^3}}$$

```
[Out] (f^(a + b/x^3)*x^9)/9 + (b*f^(a + b/x^3)*x^6*Log[f])/18 + (b^2*f^
(a + b/x^3)*x^3*Log[f]^2)/18 - (b^3*f^a*ExpIntegralEi[(b*Log[f])/
x^3]*Log[f]^3)/18
```

Rubi [A] time = 0.153477, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{1}{18} b^3 f^a \log^3(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)+\frac{1}{18} b^2 x^3 \log^2(f) f^{a+\frac{b}{x^3}}+\frac{1}{9} x^9 f^{a+\frac{b}{x^3}}+\frac{1}{18} b x^6 \log(f) f^{a+\frac{b}{x^3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x^8,x]
```

```
[Out] (f^(a + b/x^3)*x^9)/9 + (b*f^(a + b/x^3)*x^6*Log[f])/18 + (b^2*f^
(a + b/x^3)*x^3*Log[f]^2)/18 - (b^3*f^a*ExpIntegralEi[(b*Log[f])/
x^3]*Log[f]^3)/18
```

Rubi in Sympy [A] time = 12.3295, size = 76, normalized size = 0.94

$$-\frac{b^3 f^a \log(f)^3 \operatorname{Ei}\left(\frac{b \log(f)}{x^3}\right)}{18}+\frac{b^2 f^{a+\frac{b}{x^3}} x^3 \log(f)^2}{18}+\frac{b f^{a+\frac{b}{x^3}} x^6 \log(f)}{18}+\frac{f^{a+\frac{b}{x^3}} x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x**8,x)
```

```
[Out] -b**3*f**a*log(f)**3*Ei(b*log(f)/x**3)/18 + b**2*f**(a + b/x**3)*
x**3*log(f)**2/18 + b*f**(a + b/x**3)*x**6*log(f)/18 + f**(a + b/
x**3)*x**9/9
```

Mathematica [A] time = 0.030855, size = 57, normalized size = 0.7

$$\frac{1}{18} f^a \left(x^3 f^{\frac{b}{x^3}} \left(b^2 \log^2(f)+b x^3 \log(f)+2 x^6\right)-b^3 \log^3(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x^8,x]
```

```
[Out] (f^a*(-(b^3*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]^3) + f^(b/x^3)*x
^3*(2*x^6 + b*x^3*Log[f] + b^2*Log[f]^2)))/18
```

Maple [B] time = 0.046, size = 177, normalized size = 2.2

$$\frac{f^a b^3 (\ln(f))^3}{3}\left(\frac{x^9}{3(\ln(f))^3 b^3}+\frac{x^6}{2(\ln(f))^2 b^2}+\frac{x^3}{2 b \ln(f)}+\frac{11}{36}+\frac{\ln(x)}{2}-\frac{\ln(-b)}{6}-\frac{\ln(\ln(f))}{6}-\frac{x^9}{72(\ln(f))^3 b^3}\left(22\frac{(\ln(f))}{x^9}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^8,x)
```

```
[Out] 1/3*f^a*b^3*ln(f)^3*(1/3*x^9/b^3/ln(f)^3+1/2*x^6/b^2/ln(f)^2+1/2*
x^3/b/ln(f)+11/36+1/2*ln(x)-1/6*ln(-b)-1/6*ln(ln(f))-1/72/b^3/ln(
f)^3*x^9*(22*b^3*ln(f)^3/x^9+36*b^2*ln(f)^2/x^6+36*b*ln(f)/x^3+24
)+1/24/b^3/ln(f)^3*x^9*(4*b^2*ln(f)^2/x^6+4*b*ln(f)/x^3+8)*exp(b*
ln(f)/x^3)+1/6*ln(-b*ln(f)/x^3)+1/6*Ei(1,-b*ln(f)/x^3))
```

Maxima [A] time = 0.839712, size = 85, normalized size = 1.05

$$-\frac{1}{18}\,b^3 f^a \operatorname{Ei}\left(\frac{b\log(f)}{x^3}\right)\log(f)^3+\frac{1}{18}\left(2\,f^a x^9+b f^a x^6\log(f)+b^2 f^a x^3\log(f)^2\right)f^{\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^8,x, algorithm="maxima")
```

```
[Out] -1/18*b^3*f^a*Ei(b*log(f)/x^3)*log(f)^3 + 1/18*(2*f^a*x^9 + b*f^a
*x^6*log(f) + b^2*f^a*x^3*log(f)^2)*f^(b/x^3)
```

Fricas [A] time = 0.236521, size = 81, normalized size = 1.

$$-\frac{1}{18}\,b^3 f^a \operatorname{Ei}\left(\frac{b\log(f)}{x^3}\right)\log(f)^3+\frac{1}{18}\left(2\,x^9+b x^6\log(f)+b^2 x^3\log(f)^2\right)f^{\frac{a x^3+b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^8,x, algorithm="fricas")
```

```
[Out] -1/18*b^3*f^a*Ei(b*log(f)/x^3)*log(f)^3 + 1/18*(2*x^9 + b*x^6*log
(f) + b^2*x^3*log(f)^2)*f^((a*x^3 + b)/x^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^3}} x^8\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^8,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)*x^8, x)
```

3.158 $\int f^{a+\frac{b}{x^3}} x^5 \, dx$

Optimal. Leaf size=58

$$-\frac{1}{6}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^3}\right)+\frac{1}{6}bx^3\log(f)f^{a+\frac{b}{x^3}}+\frac{1}{6}x^6 f^{a+\frac{b}{x^3}}$$

```
[Out] (f^(a + b/x^3)*x^6)/6 + (b*f^(a + b/x^3)*x^3*Log[f])/6 - (b^2*f^a
*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]^2)/6
```

Rubi [A] time = 0.110466, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{1}{6}b^2 f^a \log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^3}\right)+\frac{1}{6}bx^3\log(f)f^{a+\frac{b}{x^3}}+\frac{1}{6}x^6 f^{a+\frac{b}{x^3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x^5,x]
```

```
[Out] (f^(a + b/x^3)*x^6)/6 + (b*f^(a + b/x^3)*x^3*Log[f])/6 - (b^2*f^a
*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]^2)/6
```

Rubi in Sympy [A] time = 8.53387, size = 54, normalized size = 0.93

$$-\frac{b^2 f^a \log(f)^2 \operatorname{Ei}\left(\frac{b\log(f)}{x^3}\right)}{6}+\frac{bf^{a+\frac{b}{x^3}}x^3\log(f)}{6}+\frac{f^{a+\frac{b}{x^3}}x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x**5,x)
```

```
[Out] -b**2*f**a*log(f)**2*Ei(b*log(f)/x**3)/6 + b*f**(a + b/x**3)*x**3
*log(f)/6 + f**(a + b/x**3)*x**6/6
```

Mathematica [A] time = 0.0230781, size = 44, normalized size = 0.76

$$\frac{1}{6}f^a\left(x^3 f^{\frac{b}{x^3}}\left(b\log(f)+x^3\right)-b^2\log^2(f)\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x^5,x]
```

```
[Out] (f^a*(-(b^2*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]^2) + f^(b/x^3)*x
^3*(x^3 + b*Log[f])))/6
```

Maple [B] time = 0.039, size = 141, normalized size = 2.4

$$-\frac{f^a b^2(\ln(f))^2}{3}\left(-\frac{x^6}{2(\ln(f))^2 b^2}-\frac{x^3}{b\ln(f)}-\frac{3}{4}-\frac{3\ln(x)}{2}+\frac{\ln(-b)}{2}+\frac{\ln(\ln(f))}{2}+\frac{x^6}{12(\ln(f))^2 b^2}\left(9\frac{(\ln(f))^2 b^2}{x^6}+12\frac{b\ln(}{x^3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^5,x)
```

```
[Out] -1/3*f^a*b^2*ln(f)^2*(-1/2*x^6/b^2/ln(f)^2-x^3/b/ln(f)-3/4-3/2*ln
(x)+1/2*ln(-b)+1/2*ln(ln(f))+1/12/b^2/ln(f)^2*x^6*(9*b^2*ln(f)^2/
x^6+12*b*ln(f)/x^3+6)-1/6/b^2/ln(f)^2*x^6*(3*b*ln(f)/x^3+3)*exp(b
*ln(f)/x^3)-1/2*ln(-b*ln(f)/x^3)-1/2*Ei(1,-b*ln(f)/x^3))
```

Maxima [A] time = 0.911935, size = 65, normalized size = 1.12

$$-\frac{1}{6}\,b^2 f^a \text{Ei}\left(\frac{b\log\left(f\right)}{x^3}\right)\log\left(f\right)^2+\frac{1}{6}\,\left(f^a x^6+b f^a x^3\log\left(f\right)\right) f^{\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^5,x, algorithm="maxima")
```

```
[Out] -1/6*b^2*f^a*Ei(b*log(f)/x^3)*log(f)^2 + 1/6*(f^a*x^6 + b*f^a*x^3
*log(f))*f^(b/x^3)
```

Fricas [A] time = 0.242143, size = 63, normalized size = 1.09

$$-\frac{1}{6}\,b^2 f^a \text{Ei}\left(\frac{b\log\left(f\right)}{x^3}\right)\log\left(f\right)^2+\frac{1}{6}\,\left(x^6+b x^3\log\left(f\right)\right) f^{\frac{a x^3+b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^5,x, algorithm="fricas")
```

```
[Out] -1/6*b^2*f^a*Ei(b*log(f)/x^3)*log(f)^2 + 1/6*(x^6 + b*x^3*log(f))
*f^((a*x^3 + b)/x^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^3}}x^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^5,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)*x^5, x)
```

3.159 $\int f^{a+\frac{b}{x^3}} x^2 \, dx$

Optimal. Leaf size=35

$$\frac{1}{3}x^3 f^{a+\frac{b}{x^3}} - \frac{1}{3} b f^a \log(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)$$

```
[Out] (f^(a + b/x^3)*x^3)/3 - (b*f^a*ExpIntegralEi[(b*Log[f])/x^3]*Log[
f])/3
```

Rubi [A] time = 0.0699889, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{3}x^3 f^{a+\frac{b}{x^3}} - \frac{1}{3} b f^a \log(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x^2,x]
```

```
[Out] (f^(a + b/x^3)*x^3)/3 - (b*f^a*ExpIntegralEi[(b*Log[f])/x^3]*Log[
f])/3
```

Rubi in Sympy [A] time = 5.35349, size = 32, normalized size = 0.91

$$-\frac{b f^a \log(f) \operatorname{Ei}\left(\frac{b \log(f)}{x^3}\right)}{3} + \frac{f^{a+\frac{b}{x^3}} x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x**2,x)
```

```
[Out] -b*f**a*log(f)*Ei(b*log(f)/x**3)/3 + f**(a + b/x**3)*x**3/3
```

Mathematica [A] time = 0.00891985, size = 32, normalized size = 0.91

$$\frac{1}{3} f^a \left(x^3 f^{\frac{b}{x^3}} - b \log(f) \text{ExpIntegralEi}\left(\frac{b \log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x^2,x]
```

```
[Out] (f^a*(f^(b/x^3)*x^3 - b*ExpIntegralEi[(b*Log[f])/x^3]*Log[f]))/3
```

Maple [B] time = 0.03, size = 97, normalized size = 2.8

$$\frac{f^a b \ln(f)}{3}\left(\frac{x^3}{b\ln(f)} + 1 + 3\ln(x) - \ln(-b) - \ln(\ln(f)) - \frac{x^3}{2b\ln(f)}\left(2\frac{b\ln(f)}{x^3} + 2\right) + \frac{x^3}{b\ln(f)} e^{\frac{b\ln(f)}{x^3}} + \ln\left(-\frac{b\ln(f)}{x^3}\right) + Ei$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^2,x)
```

```
[Out] 1/3*f^a*b*ln(f)*(x^3/b/ln(f)+1+3*ln(x)-ln(-b)-ln(ln(f))-1/2/b/ln(
f)*x^3*(2*b*ln(f)/x^3+2)+1/b/ln(f)*x^3*exp(b*ln(f)/x^3)+ln(-b*ln(
f)/x^3)+Ei(1,-b*ln(f)/x^3))
```

Maxima [A] time = 0.830683, size = 43, normalized size = 1.23

$$\frac{1}{3} f^{a} f^{\frac{b}{x^{3}}} x^{3} - \frac{1}{3} b f^{a} \mathrm{Ei}\left(\frac{b \log(f)}{x^{3}}\right) \log(f)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^2,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*f^(b/x^3)*x^3 - 1/3*b*f^a*Ei(b*log(f)/x^3)*log(f)
```

Fricas [A] time = 0.253354, size = 47, normalized size = 1.34

$$\frac{1}{3} f^{\frac{a x^{3}+b}{x^{3}}} x^{3} - \frac{1}{3} b f^{a} \mathrm{Ei}\left(\frac{b \log(f)}{x^{3}}\right) \log(f)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^2,x, algorithm="fricas")
```

```
[Out] 1/3*f^((a*x^3 + b)/x^3)*x^3 - 1/3*b*f^a*Ei(b*log(f)/x^3)*log(f)
```

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

$$\int f^{a+\frac{b}{x^{3}}} x^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**2,x)
```

```
[Out] Integral(f**(a + b/x**3)*x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^{3}}} x^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^2,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)*x^2, x)
```

3.160 $\int \frac{f^{a+\frac{b}{x^3}}}{x}\,dx$

Optimal. Leaf size=15

$$-\frac{1}{3}f^a\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^3}\right)$$

```
[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x^3])/3
```

Rubi [A] time = 0.0353709, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{1}{3}f^a\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x,x]

[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x^3])/3
```

Rubi in Sympy [A] time = 3.06504, size = 15, normalized size = 1.

$$-\frac{f^a\,\text{Ei}\left(\frac{b\log(f)}{x^3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x,x)

[Out] -f**a*Ei(b*log(f)/x**3)/3
```

Mathematica [A] time = 0.00514245, size = 15, normalized size = 1.

$$-\frac{1}{3}f^a\text{ExpIntegralEi}\left(\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x,x]

[Out] -(f^a*ExpIntegralEi[(b*Log[f])/x^3])/3
```

Maple [B] time = 0.023, size = 41, normalized size = 2.7

$$-\frac{f^a}{3}\left(-3\ln(x)+\ln(-b)+\ln(\ln(f))-\ln\left(-\frac{b\ln(f)}{x^3}\right)-Ei\left(1,-\frac{b\ln(f)}{x^3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x,x)
```

```
[Out] -1/3*f^a*(-3*ln(x)+ln(-b)+ln(ln(f))-ln(-b*ln(f)/x^3)-Ei(1,-b*ln(f
)/x^3))
```

Maxima [A] time = 0.802509, size = 18, normalized size = 1.2

$$-\frac{1}{3} f^a \text{Ei}\left(\frac{b \log(f)}{x^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x,x, algorithm="maxima")
```

```
[Out] -1/3*f^a*Ei(b*log(f)/x^3)
```

Fricas [A] time = 0.270911, size = 18, normalized size = 1.2

$$-\frac{1}{3} f^a \text{Ei}\left(\frac{b \log(f)}{x^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x,x, algorithm="fricas")
```

```
[Out] -1/3*f^a*Ei(b*log(f)/x^3)
```

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

$$\int \frac{f^{a+\frac{b}{x^3}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x,x)
```

```
[Out] Integral(f**(a + b/x**3)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^3}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)/x, x)
```

3.161 $\int \frac{f^{a+\frac{b}{x^3}}}{x^4} dx$

Optimal. Leaf size=20

$$-\frac{f^{a+\frac{b}{x^3}}}{3b\log(f)}$$

```
[Out] -f^(a + b/x^3)/(3*b*Log[f])
```

Rubi [A] time = 0.0360995, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^{a+\frac{b}{x^3}}}{3b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^4,x]

[Out] -f^(a + b/x^3)/(3*b*Log[f])
```

Rubi in Sympy [A] time = 3.40104, size = 15, normalized size = 0.75

$$-\frac{f^{a+\frac{b}{x^3}}}{3b\log{(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**4,x)

[Out] -f**(a + b/x**3)/(3*b*log(f))
```

Mathematica [A] time = 0.00623711, size = 20, normalized size = 1.

$$-\frac{f^{a+\frac{b}{x^3}}}{3b\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^4,x]

[Out] -f^(a + b/x^3)/(3*b*Log[f])
```

Maple [A] time = 0.002, size = 19, normalized size = 1.

$$-\frac{1}{3\,b\ln(f)}f^{a+\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x^4,x)

[Out] -1/3*f^(a+b/x^3)/b/ln(f)
```

Maxima [A] time = 0.766235, size = 24, normalized size = 1.2

$$-\frac{f^{a+\frac{b}{x^3}}}{3\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^4,x, algorithm="maxima")

[Out] -1/3*f^(a + b/x^3)/(b*log(f))
```

Fricas [A] time = 0.244846, size = 30, normalized size = 1.5

$$-\frac{f^{\frac{ax^3+b}{x^3}}}{3\,b\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^4,x, algorithm="fricas")

[Out] -1/3*f^((a*x^3 + b)/x^3)/(b*log(f))
```

Sympy [A] time = 0.215427, size = 29, normalized size = 1.45

$$\begin{cases} -\frac{f^{a+\frac{b}{x^3}}}{3b\log\left(f\right)} & \text{for}\ 3b\log\left(f\right)\neq 0 \\ -\frac{1}{3x^3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x**4,x)

[Out] Piecewise((-f**(a + b/x**3)/(3*b*log(f)), Ne(3*b*log(f), 0)), (-1
/(3*x**3), True))
```

GIAC/XCAS [A] time = 0.245394, size = 24, normalized size = 1.2

$$-\frac{f^{a+\frac{b}{x^3}}}{3\,b\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^4,x, algorithm="giac")

[Out] -1/3*f^(a + b/x^3)/(b*ln(f))
```

3.162 $\int \frac{f^{a+\frac{b}{x^3}}}{x^7} dx$

Optimal. Leaf size=44

$$\frac{f^{a+\frac{b}{x^3}}}{3b^2\log^2(f)} - \frac{f^{a+\frac{b}{x^3}}}{3bx^3\log(f)}$$

```
[Out] f^(a + b/x^3)/(3*b^2*Log[f]^2) - f^(a + b/x^3)/(3*b*x^3*Log[f])
```

Rubi [A] time = 0.0740412, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{f^{a+\frac{b}{x^3}}}{3b^2\log^2(f)} - \frac{f^{a+\frac{b}{x^3}}}{3bx^3\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^7,x]
```

```
[Out] f^(a + b/x^3)/(3*b^2*Log[f]^2) - f^(a + b/x^3)/(3*b*x^3*Log[f])
```

Rubi in Sympy [A] time = 6.56877, size = 36, normalized size = 0.82

$$-\frac{f^{a+\frac{b}{x^3}}}{3bx^3\log(f)} + \frac{f^{a+\frac{b}{x^3}}}{3b^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**7,x)
```

```
[Out] -f**(a + b/x**3)/(3*b*x**3*log(f)) + f**(a + b/x**3)/(3*b**2*log(
f)**2)
```

Mathematica [A] time = 0.0119088, size = 32, normalized size = 0.73

$$\frac{f^{a+\frac{b}{x^3}}\left(x^3 - b\log(f)\right)}{3b^2x^3\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^7,x]
```

```
[Out] (f^(a + b/x^3)*(x^3 - b*Log[f]))/(3*b^2*x^3*Log[f]^2)
```

Maple [A] time = 0.022, size = 52, normalized size = 1.2

$$\frac{1}{x^6}\left(\frac{x^6}{3(\ln(f))^2 b^2}e^{\left(a+\frac{b}{x^3}\right)\ln(f)} - \frac{x^3}{3b\ln(f)}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x^7,x)
```

```
[Out] (1/3/b^2/ln(f)^2*x^6*exp((a+b/x^3)*ln(f))-1/3/b/ln(f)*x^3*exp((a+
b/x^3)*ln(f)))/x^6
```

Maxima [A] time = 0.811451, size = 30, normalized size = 0.68

$$\frac{f^{a}\left(2, -\frac{b\log(f)}{x^{3}}\right)}{3\,b^{2}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^7,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*gamma(2, -b*log(f)/x^3)/(b^2*log(f)^2)
```

Fricas [A] time = 0.251145, size = 46, normalized size = 1.05

$$\frac{\left(x^{3} - b\log\left(f\right)\right) f^{\frac{ax^{3}+b}{x^{3}}}}{3\,b^{2}x^{3}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^7,x, algorithm="fricas")
```

```
[Out] 1/3*(x^3 - b*log(f))*f^((a*x^3 + b)/x^3)/(b^2*x^3*log(f)^2)
```

Sympy [A] time = 0.250112, size = 29, normalized size = 0.66

$$\frac{f^{a+\frac{b}{x^{3}}}\left(-b\log\left(f\right) + x^{3}\right)}{3b^{2}x^{3}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x**7,x)
```

```
[Out] f**(a + b/x**3)*(-b*log(f) + x**3)/(3*b**2*x**3*log(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^{3}}}}{x^{7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^7,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)/x^7, x)
```

3.163 $\int \frac{f^{a+\frac{b}{x^3}}}{x^{10}}\,dx$

Optimal. Leaf size=67

$$-\frac{2f^{a+\frac{b}{x^3}}}{3b^3\log^3(f)}+\frac{2f^{a+\frac{b}{x^3}}}{3b^2x^3\log^2(f)}-\frac{f^{a+\frac{b}{x^3}}}{3bx^6\log(f)}$$

```
[Out] (-2*f^(a + b/x^3))/(3*b^3*Log[f]^3) + (2*f^(a + b/x^3))/(3*b^2*x^
3*Log[f]^2) - f^(a + b/x^3)/(3*b*x^6*Log[f])
```

Rubi [A] time = 0.112556, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2f^{a+\frac{b}{x^3}}}{3b^3\log^3(f)}+\frac{2f^{a+\frac{b}{x^3}}}{3b^2x^3\log^2(f)}-\frac{f^{a+\frac{b}{x^3}}}{3bx^6\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^10,x]
```

```
[Out] (-2*f^(a + b/x^3))/(3*b^3*Log[f]^3) + (2*f^(a + b/x^3))/(3*b^2*x^
3*Log[f]^2) - f^(a + b/x^3)/(3*b*x^6*Log[f])
```

Rubi in Sympy [A] time = 11.3278, size = 61, normalized size = 0.91

$$-\frac{f^{a+\frac{b}{x^3}}}{3bx^6\log(f)}+\frac{2f^{a+\frac{b}{x^3}}}{3b^2x^3\log(f)^2}-\frac{2f^{a+\frac{b}{x^3}}}{3b^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**10,x)
```

```
[Out] -f**(a + b/x**3)/(3*b*x**6*log(f)) + 2*f**(a + b/x**3)/(3*b**2*x*
*3*log(f)**2) - 2*f**(a + b/x**3)/(3*b**3*log(f)**3)
```

Mathematica [A] time = 0.0148043, size = 45, normalized size = 0.67

$$-\frac{f^{a+\frac{b}{x^3}}\left(b^2\log^2(f)-2bx^3\log(f)+2x^6\right)}{3b^3x^6\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^10,x]
```

```
[Out] -(f^(a + b/x^3)*(2*x^6 - 2*b*x^3*Log[f] + b^2*Log[f]^2))/(3*b^3*x
^6*Log[f]^3)
```

Maple [A] time = 0.028, size = 75, normalized size = 1.1

$$\frac{1}{x^9}\left(-\frac{2\,x^9}{3\,(\ln(f))^3\,b^3}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}+\frac{2\,x^6}{3\,(\ln(f))^2\,b^2}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}-\frac{x^3}{3\,b\ln(f)}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^3)/x^10,x)
```

```
[Out] (-2/3/b^3/ln(f)^3*x^9*exp((a+b/x^3)*ln(f))+2/3/b^2/ln(f)^2*x^6*ex
p((a+b/x^3)*ln(f))-1/3/b/ln(f)*x^3*exp((a+b/x^3)*ln(f)))/x^9
```

Maxima [A] time = 0.819117, size = 30, normalized size = 0.45

$$-\frac{f^{a}\Gamma\left(3, -\frac{b \log(f)}{x^{3}}\right)}{3 \, b^{3} \log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^10,x, algorithm="maxima")
```

```
[Out] -1/3*f^a*gamma(3, -b*log(f)/x^3)/(b^3*log(f)^3)
```

Fricas [A] time = 0.256633, size = 63, normalized size = 0.94

$$-\frac{{\left(2 \, x^{6} - 2 \, b x^{3} \log\left(f\right) + b^{2} \log\left(f\right)^{2}\right)} f^{\frac{a x^{3} + b}{x^{3}}}}{3 \, b^{3} x^{6} \log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^10,x, algorithm="fricas")
```

```
[Out] -1/3*(2*x^6 - 2*b*x^3*log(f) + b^2*log(f)^2)*f^((a*x^3 + b)/x^3)/
(b^3*x^6*log(f)^3)
```

Sympy [A] time = 0.290538, size = 44, normalized size = 0.66

$$\frac{f^{a + \frac{b}{x^{3}}} \left(- b^{2} \log{\left(f \right)}^{2} + 2 b x^{3} \log{\left(f \right)} - 2 x^{6}\right)}{3 b^{3} x^{6} \log{\left(f \right)}^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**3)/x**10,x)
```

```
[Out] f**(a + b/x**3)*(-b**2*log(f)**2 + 2*b*x**3*log(f) - 2*x**6)/(3*b
**3*x**6*log(f)**3)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a + \frac{b}{x^{3}}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^10,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)/x^10, x)
```

3.164 $\int \frac{f^{a+\frac{b}{x^3}}}{x^{13}}\,dx$

Optimal. Leaf size=83

$$\frac{2f^{a+\frac{b}{x^3}}}{b^4\log^4(f)}-\frac{2f^{a+\frac{b}{x^3}}}{b^3x^3\log^3(f)}+\frac{f^{a+\frac{b}{x^3}}}{b^2x^6\log^2(f)}-\frac{f^{a+\frac{b}{x^3}}}{3bx^9\log(f)}$$

```
[Out] (2*f^(a + b/x^3))/(b^4*Log[f]^4) - (2*f^(a + b/x^3))/(b^3*x^3*Log
[f]^3) + f^(a + b/x^3)/(b^2*x^6*Log[f]^2) - f^(a + b/x^3)/(3*b*x^
9*Log[f])
```

Rubi [A] time = 0.153882, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2f^{a+\frac{b}{x^3}}}{b^4\log^4(f)}-\frac{2f^{a+\frac{b}{x^3}}}{b^3x^3\log^3(f)}+\frac{f^{a+\frac{b}{x^3}}}{b^2x^6\log^2(f)}-\frac{f^{a+\frac{b}{x^3}}}{3bx^9\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^13,x]
```

```
[Out] (2*f^(a + b/x^3))/(b^4*Log[f]^4) - (2*f^(a + b/x^3))/(b^3*x^3*Log
[f]^3) + f^(a + b/x^3)/(b^2*x^6*Log[f]^2) - f^(a + b/x^3)/(3*b*x^
9*Log[f])
```

Rubi in Sympy [A] time = 17.1628, size = 78, normalized size = 0.94

$$-\frac{f^{a+\frac{b}{x^3}}}{3bx^9\log(f)}+\frac{f^{a+\frac{b}{x^3}}}{b^2x^6\log(f)^2}-\frac{2f^{a+\frac{b}{x^3}}}{b^3x^3\log(f)^3}+\frac{2f^{a+\frac{b}{x^3}}}{b^4\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**13,x)
```

```
[Out] -f**(a + b/x**3)/(3*b*x**9*log(f)) + f**(a + b/x**3)/(b**2*x**6*l
og(f)**2) - 2*f**(a + b/x**3)/(b**3*x**3*log(f)**3) + 2*f**(a + b
/x**3)/(b**4*log(f)**4)
```

Mathematica [A] time = 0.0176563, size = 58, normalized size = 0.7

$$\frac{f^{a+\frac{b}{x^3}}\left(-b^3\log^3(f)+3b^2x^3\log^2(f)-6bx^6\log(f)+6x^9\right)}{3b^4x^9\log^4(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^13,x]
```

```
[Out] (f^(a + b/x^3)*(6*x^9 - 6*b*x^6*Log[f] + 3*b^2*x^3*Log[f]^2 - b^3
*Log[f]^3))/(3*b^4*x^9*Log[f]^4)
```

Maple [A] time = 0.035, size = 97, normalized size = 1.2

$$\frac{1}{x^{12}}\left(\frac{x^6}{(\ln(f))^2 b^2}\mathrm{e}^{\left(a+\frac{b}{x^3}\right)\ln(f)}+2\frac{x^{12}}{(\ln(f))^4 b^4}\mathrm{e}^{\left(a+\frac{b}{x^3}\right)\ln(f)}-2\frac{x^9}{(\ln(f))^3 b^3}\mathrm{e}^{\left(a+\frac{b}{x^3}\right)\ln(f)}-\frac{x^3}{3\,b\ln(f)}\mathrm{e}^{\left(a+\frac{b}{x^3}\right)\ln(f)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x^13,x)
```

```
[Out] (1/b^2/ln(f)^2*x^6*exp((a+b/x^3)*ln(f))+2/b^4/ln(f)^4*x^12*exp((a
+b/x^3)*ln(f))-2/b^3/ln(f)^3*x^9*exp((a+b/x^3)*ln(f))-1/3/b/ln(f)
*x^3*exp((a+b/x^3)*ln(f)))/x^12
```

Maxima [A] time = 0.816781, size = 30, normalized size = 0.36

$$\frac{f^a\left(4,-\frac{b\log(f)}{x^3}\right)}{3\,b^4\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^13,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*gamma(4, -b*log(f)/x^3)/(b^4*log(f)^4)
```

Fricas [A] time = 0.236218, size = 81, normalized size = 0.98

$$\frac{\left(6\,x^9-6\,bx^6\log(f)+3\,b^2x^3\log(f)^2-b^3\log(f)^3\right)f^{\frac{ax^3+b}{x^3}}}{3\,b^4x^9\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^13,x, algorithm="fricas")
```

```
[Out] 1/3*(6*x^9 - 6*b*x^6*log(f) + 3*b^2*x^3*log(f)^2 - b^3*log(f)^3)*
f^((a*x^3 + b)/x^3)/(b^4*x^9*log(f)^4)
```

Sympy [A] time = 0.329948, size = 58, normalized size = 0.7

$$\frac{f^{a+\frac{b}{x^3}}\left(-b^3\log(f)^3+3b^2x^3\log(f)^2-6bx^6\log(f)+6x^9\right)}{3b^4x^9\log(f)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x**13,x)
```

```
[Out] f**(a + b/x**3)*(-b**3*log(f)**3 + 3*b**2*x**3*log(f)**2 - 6*b*x*
*6*log(f) + 6*x**9)/(3*b**4*x**9*log(f)**4)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x^3}}}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^13,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)/x^13, x)
```

3.165 $\int \frac{f^{a+\frac{b}{x^3}}}{x^{16}}\,dx$

Optimal. Leaf size=24

$$-\frac{f^a \text{Gamma}\left(5,-\frac{b\log(f)}{x^3}\right)}{3b^5\log^5(f)}$$

```
[Out] -(f^a*Gamma[5, -((b*Log[f])/x^3)])/(3*b^5*Log[f]^5)
```

Rubi [A] time = 0.0378146, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^a \text{Gamma}\left(5,-\frac{b\log(f)}{x^3}\right)}{3b^5\log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^16,x]

[Out] -(f^a*Gamma[5, -((b*Log[f])/x^3)])/(3*b^5*Log[f]^5)
```

Rubi in Sympy [A] time = 3.6305, size = 26, normalized size = 1.08

$$-\frac{f^a\left(5,-\frac{b\log(f)}{x^3}\right)}{3b^5\log(f)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**16,x)

[Out] -f**a*Gamma(5, -b*log(f)/x**3)/(3*b**5*log(f)**5)
```

Mathematica [B] time = 0.0198981, size = 69, normalized size = 2.88

$$-\frac{f^{a+\frac{b}{x^3}}\left(b^4\log^4(f)-4b^3x^3\log^3(f)+12b^2x^6\log^2(f)-24bx^9\log(f)+24x^{12}\right)}{3b^5x^{12}\log^5(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^16,x]

[Out] -(f^(a + b/x^3)*(24*x^12 - 24*b*x^9*Log[f] + 12*b^2*x^6*Log[f]^2
- 4*b^3*x^3*Log[f]^3 + b^4*Log[f]^4))/(3*b^5*x^12*Log[f]^5)
```

Maple [A] time = 0.045, size = 121, normalized size = 5.

$$\frac{1}{x^{15}}\left(-8\frac{x^{15}}{(\ln(f))^5 b^5}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}+8\frac{x^{12}}{(\ln(f))^4 b^4}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}-4\frac{x^9}{(\ln(f))^3 b^3}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}+\frac{4x^6}{3(\ln(f))^2 b^2}e^{\left(a+\frac{b}{x^3}\right)\ln(f)}-\frac{x^3}{3b\ln(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^3)/x^16,x)
```

```
[Out] (-8/b^5/ln(f)^5*x^15*exp((a+b/x^3)*ln(f))+8/b^4/ln(f)^4*x^12*exp(
(a+b/x^3)*ln(f))-4/b^3/ln(f)^3*x^9*exp((a+b/x^3)*ln(f))+4/3/b^2/l
n(f)^2*x^6*exp((a+b/x^3)*ln(f))-1/3/b/ln(f)*x^3*exp((a+b/x^3)*ln(
f)))/x^15
```

Maxima [A] time = 0.846981, size = 30, normalized size = 1.25

$$-\frac{f^{a}\Gamma\left(5, -\frac{b\log(f)}{x^{3}}\right)}{3\,b^{5}\log\left(f\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^16,x, algorithm="maxima")
```

```
[Out] -1/3*f^a*gamma(5, -b*log(f)/x^3)/(b^5*log(f)^5)
```

Fricas [A] time = 0.239199, size = 96, normalized size = 4.

$$-\frac{\left(24\,x^{12} - 24\,bx^{9}\log\left(f\right) + 12\,b^{2}x^{6}\log\left(f\right)^{2} - 4\,b^{3}x^{3}\log\left(f\right)^{3} + b^{4}\log\left(f\right)^{4}\right)f^{\frac{ax^{3}+b}{x^{3}}}}{3\,b^{5}x^{12}\log\left(f\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^16,x, algorithm="fricas")
```

```
[Out] -1/3*(24*x^12 - 24*b*x^9*log(f) + 12*b^2*x^6*log(f)^2 - 4*b^3*x^3
*log(f)^3 + b^4*log(f)^4)*f^((a*x^3 + b)/x^3)/(b^5*x^12*log(f)^5)
```

Sympy [A] time = 0.363744, size = 71, normalized size = 2.96

$$\frac{f^{a+\frac{b}{x^{3}}}\left(-b^{4}\log\left(f\right)^{4} + 4b^{3}x^{3}\log\left(f\right)^{3} - 12b^{2}x^{6}\log\left(f\right)^{2} + 24bx^{9}\log\left(f\right) - 24x^{12}\right)}{3b^{5}x^{12}\log\left(f\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**3)/x**16,x)
```

```
[Out] f**(a + b/x**3)*(-b**4*log(f)**4 + 4*b**3*x**3*log(f)**3 - 12*b**
2*x**6*log(f)**2 + 24*b*x**9*log(f) - 24*x**12)/(3*b**5*x**12*log
(f)**5)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^{3}}}}{x^{16}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^16,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)/x^16, x)
```

3.166 $\int \frac{f^{a+\frac{b}{x^3}}}{x^{19}}\,dx$

Optimal. Leaf size=24

$$\frac{f^a\text{Gamma}\left(6,-\frac{b\log(f)}{x^3}\right)}{3b^6\log^6(f)}$$

```
[Out] (f^a*Gamma[6, -((b*Log[f])/x^3)])/(3*b^6*Log[f]^6)
```

Rubi [A] time = 0.0382264, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a\text{Gamma}\left(6,-\frac{b\log(f)}{x^3}\right)}{3b^6\log^6(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b/x^3)/x^19,x]
```

```
[Out] (f^a*Gamma[6, -((b*Log[f])/x^3)])/(3*b^6*Log[f]^6)
```

Rubi in Sympy [A] time = 3.65596, size = 24, normalized size = 1.

$$\frac{f^a\left(6,-\frac{b\log(f)}{x^3}\right)}{3b^6\log(f)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b/x**3)/x**19,x)
```

```
[Out] f**a*Gamma(6, -b*log(f)/x**3)/(3*b**6*log(f)**6)
```

Mathematica [B] time = 0.0230401, size = 82, normalized size = 3.42

$$\frac{f^{a+\frac{b}{x^3}}\left(-b^5\log^5(f)+5b^4x^3\log^4(f)-20b^3x^6\log^3(f)+60b^2x^9\log^2(f)-120bx^{12}\log(f)+120x^{15}\right)}{3b^6x^{15}\log^6(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b/x^3)/x^19,x]
```

```
[Out] (f^(a + b/x^3)*(120*x^15 - 120*b*x^12*Log[f] + 60*b^2*x^9*Log[f]^
2 - 20*b^3*x^6*Log[f]^3 + 5*b^4*x^3*Log[f]^4 - b^5*Log[f]^5))/(3*
b^6*x^15*Log[f]^6)
```

Maple [A] time = 0.045, size = 84, normalized size = 3.5

$$-\frac{-120\,x^{15}+120\,\ln(f)\,bx^{12}-60\,(\ln(f))^2\,b^2x^9+20\,b^3x^6\,(\ln(f))^3-5\,(\ln(f))^4\,b^4x^3+(\ln(f))^5\,b^5}{3\,(\ln(f))^6\,b^6x^{15}}f^{\frac{ax^3+b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x^19,x)
```

```
[Out] -1/3*(-120*x^15+120*ln(f)*b*x^12-60*ln(f)^2*b^2*x^9+20*b^3*x^6*ln
(f)^3-5*ln(f)^4*b^4*x^3+ln(f)^5*b^5)/ln(f)^6/b^6/x^15*f^((a*x^3+b
)/x^3)
```

Maxima [A] time = 0.802919, size = 30, normalized size = 1.25

$$\frac{f^{a}\Gamma\left(6, -\frac{b\log(f)}{x^3}\right)}{3\,b^6\log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^19,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*gamma(6, -b*log(f)/x^3)/(b^6*log(f)^6)
```

Fricas [A] time = 0.240689, size = 113, normalized size = 4.71

$$\frac{\left(120\,x^{15} - 120\,bx^{12}\log\left(f\right) + 60\,b^2x^9\log\left(f\right)^2 - 20\,b^3x^6\log\left(f\right)^3 + 5\,b^4x^3\log\left(f\right)^4 - b^5\log\left(f\right)^5\right)f^{\frac{ax^3+b}{x^3}}}{3\,b^6x^{15}\log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^19,x, algorithm="fricas")
```

```
[Out] 1/3*(120*x^15 - 120*b*x^12*log(f) + 60*b^2*x^9*log(f)^2 - 20*b^3*
x^6*log(f)^3 + 5*b^4*x^3*log(f)^4 - b^5*log(f)^5)*f^((a*x^3 + b)/
x^3)/(b^6*x^15*log(f)^6)
```

Sympy [A] time = 0.383787, size = 85, normalized size = 3.54

$$\frac{f^{a+\frac{b}{x^3}}\left(-b^5\log\left(f\right)^5 + 5b^4x^3\log\left(f\right)^4 - 20b^3x^6\log\left(f\right)^3 + 60b^2x^9\log\left(f\right)^2 - 120bx^{12}\log\left(f\right) + 120x^{15}\right)}{3b^6x^{15}\log\left(f\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x**19,x)
```

```
[Out] f**(a + b/x**3)*(-b**5*log(f)**5 + 5*b**4*x**3*log(f)**4 - 20*b**
3*x**6*log(f)**3 + 60*b**2*x**9*log(f)**2 - 120*b*x**12*log(f) +
120*x**15)/(3*b**6*x**15*log(f)**6)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^3}}}{x^{19}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^19,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)/x^19, x)
```

3.167 $\int f^{a+\frac{b}{x^3}} x^4 \, dx$

Optimal. Leaf size=34

$$\frac{1}{3}x^5 f^a \left(-\frac{b\log(f)}{x^3}\right)^{5/3} \text{Gamma}\left(-\frac{5}{3}, -\frac{b\log(f)}{x^3}\right)$$

```
[Out] (f^a*x^5*Gamma[-5/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(5/3)
)/3
```

Rubi [A] time = 0.0394561, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{1}{3}x^5 f^a \left(-\frac{b\log(f)}{x^3}\right)^{5/3} \text{Gamma}\left(-\frac{5}{3}, -\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x^4,x]
```

```
[Out] (f^a*x^5*Gamma[-5/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(5/3)
)/3
```

Rubi in Sympy [A] time = 3.21056, size = 36, normalized size = 1.06

$$\frac{f^a x^5 \left(-\frac{b\log(f)}{x^3}\right)^{\frac{5}{3}} \left(-\frac{5}{3}, -\frac{b\log(f)}{x^3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x**4,x)
```

```
[Out] f**a*x**5*(-b*log(f)/x**3)**(5/3)*Gamma(-5/3, -b*log(f)/x**3)/3
```

Mathematica [A] time = 0.0815512, size = 59, normalized size = 1.74

$$\frac{1}{10}x^2 f^a \left(3x^3 \left(-\frac{b\log(f)}{x^3}\right)^{5/3} \text{Gamma}\left(\frac{1}{3}, -\frac{b\log(f)}{x^3}\right) + f^{\frac{b}{x^3}} \left(3b\log(f) + 2x^3\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x^4,x]
```

```
[Out] (f^a*x^2*(3*x^3*Gamma[1/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))
^(5/3) + f^(b/x^3)*(2*x^3 + 3*b*Log[f])))/10
```

Maple [B] time = 0.037, size = 120, normalized size = 3.5

$$-\frac{f^a}{3}(-b)^{\frac{5}{3}}(\ln(f))^{\frac{5}{3}}\left(\frac{3b^2\pi\sqrt{3}}{5x(2/3)}\sqrt[3]{\ln(f)}(-b)^{-\frac{5}{3}}\frac{1}{\sqrt[3]{-\frac{b\ln(f)}{x^3}}} - \frac{3x^5}{5}\left(\frac{3b\ln(f)}{2x^3}+1\right)e^{\frac{b\ln(f)}{x^3}}(-b)^{-\frac{5}{3}}(\ln(f))^{-\frac{5}{3}} - \frac{9b^2}{10x}\sqrt[3]{\ln(f)}\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^4,x)
```

```
[Out] -1/3*f^a*(-b)^(5/3)*ln(f)^(5/3)*(3/5/x/(-b)^(5/3)*ln(f)^(1/3)*b^2
*Pi*3^(1/2)/GAMMA(2/3)/(-b*ln(f)/x^3)^(1/3)-3/5*x^5/(-b)^(5/3)/ln
(f)^(5/3)*(3/2*b*ln(f)/x^3+1)*exp(b*ln(f)/x^3)-9/10/x/(-b)^(5/3)*
ln(f)^(1/3)*b^2/(-b*ln(f)/x^3)^(1/3)*GAMMA(1/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.811124, size = 88, normalized size = 2.59

$$\frac{3\,b^2 f^a \left(\frac{1}{3}, -\frac{b\log(f)}{x^3}\right) \log(f)^2}{10\,x \left(-\frac{b\log(f)}{x^3}\right)^{\frac{1}{3}}} + \frac{1}{10}\left(2\,f^a x^5 + 3\,b f^a x^2 \log(f)\right) f^{\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^4,x, algorithm="maxima")
```

```
[Out] 3/10*b^2*f^a*gamma(1/3, -b*log(f)/x^3)*log(f)^2/(x*(-b*log(f)/x^3
)^(1/3)) + 1/10*(2*f^a*x^5 + 3*b*f^a*x^2*log(f))*f^(b/x^3)
```

Fricas [A] time = 0.278618, size = 90, normalized size = 2.65

$$\frac{3\,b^2 f^a \left(\frac{1}{3}, -\frac{b\log(f)}{x^3}\right) \log(f)^2 + \left(2\,x^5 + 3\,b x^2 \log(f)\right) \left(-b\log(f)\right)^{\frac{1}{3}} f^{\frac{a x^3 + b}{x^3}}}{10\,\left(-b\log(f)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^4,x, algorithm="fricas")
```

```
[Out] 1/10*(3*b^2*f^a*gamma(1/3, -b*log(f)/x^3)*log(f)^2 + (2*x^5 + 3*b
*x^2*log(f))*(-b*log(f))^(1/3)*f^((a*x^3 + b)/x^3))/(-b*log(f))^(
1/3)
```

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

$$\int f^{a+\frac{b}{x^3}} x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**4,x)
```

```
[Out] Integral(f**(a + b/x**3)*x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^3}} x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^4,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)*x^4, x)
```

3.168 $\int f^{a+\frac{b}{x^3}} x^3 \, dx$

Optimal. Leaf size=34

$$\frac{1}{3} x^4 f^a \left(-\frac{b \log(f)}{x^3}\right)^{4/3} \text{Gamma}\left(-\frac{4}{3}, -\frac{b \log(f)}{x^3}\right)$$

```
[Out] (f^a*x^4*Gamma[-4/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(4/3)
)/3
```

Rubi [A] time = 0.0388127, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{1}{3} x^4 f^a \left(-\frac{b \log(f)}{x^3}\right)^{4/3} \text{Gamma}\left(-\frac{4}{3}, -\frac{b \log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x^3,x]
```

```
[Out] (f^a*x^4*Gamma[-4/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(4/3)
)/3
```

Rubi in Sympy [A] time = 3.15398, size = 36, normalized size = 1.06

$$\frac{f^a x^4 \left(-\frac{b \log(f)}{x^3}\right)^{\frac{4}{3}} \left(-\frac{4}{3}, -\frac{b \log(f)}{x^3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x**3,x)
```

```
[Out] f**a*x**4*(-b*log(f)/x**3)**(4/3)*Gamma(-4/3, -b*log(f)/x**3)/3
```

Mathematica [A] time = 0.0777997, size = 55, normalized size = 1.62

$$\frac{1}{4} x f^a \left(3x^3 \left(-\frac{b \log(f)}{x^3}\right)^{4/3} \text{Gamma}\left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right) + f^{\frac{b}{x^3}} \left(3b \log(f) + x^3\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x^3,x]
```

```
[Out] (f^a*x*(3*x^3*Gamma[2/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(
4/3) + f^(b/x^3)*(x^3 + 3*b*Log[f])))/4
```

Maple [B] time = 0.034, size = 115, normalized size = 3.4

$$\frac{f^a b}{3} (\ln(f))^{\frac{4}{3}} \sqrt[3]{-b} \left(\frac{9 b^2 (2/3)}{4 x^2} (\ln(f))^{\frac{2}{3}} (-b)^{-\frac{4}{3}} \left(-\frac{b \ln(f)}{x^3}\right)^{-\frac{2}{3}} - \frac{3 x^4}{4} \left(3 \frac{b \ln(f)}{x^3} + 1\right) e^{\frac{b \ln(f)}{x^3}} (-b)^{-\frac{4}{3}} (\ln(f))^{-\frac{4}{3}} - \frac{9 b^2}{4 x^2} (\ln(f)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)*x^3,x)
```

```
[Out] 1/3*f^a*b*ln(f)^(4/3)*(-b)^(1/3)*(9/4/x^2/(-b)^(4/3)*ln(f)^(2/3)*
b^2*GAMMA(2/3)/(-b*ln(f)/x^3)^(2/3)-3/4*x^4/(-b)^(4/3)/ln(f)^(4/3
)*(3*b*ln(f)/x^3+1)*exp(b*ln(f)/x^3)-9/4/x^2/(-b)^(4/3)*ln(f)^(2/
3)*b^2/(-b*ln(f)/x^3)^(2/3)*GAMMA(2/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.837115, size = 84, normalized size = 2.47

$$\frac{3\,b^2 f^a \left(\frac{2}{3}, -\frac{b\log(f)}{x^3}\right) \log(f)^2}{4\,x^2 \left(-\frac{b\log(f)}{x^3}\right)^{\frac{2}{3}}} + \frac{1}{4}\left(f^a x^4 + 3\,b f^a x \log(f)\right) f^{\frac{b}{x^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^3,x, algorithm="maxima")
```

```
[Out] 3/4*b^2*f^a*gamma(2/3, -b*log(f)/x^3)*log(f)^2/(x^2*(-b*log(f)/x^
3)^(2/3)) + 1/4*(f^a*x^4 + 3*b*f^a*x*log(f))*f^(b/x^3)
```

Fricas [A] time = 0.271642, size = 85, normalized size = 2.5

$$\frac{3\,b^2 f^a \left(\frac{2}{3}, -\frac{b\log(f)}{x^3}\right) \log(f)^2 + \left(x^4 + 3\,bx\log(f)\right)\left(-b\log(f)\right)^{\frac{2}{3}} f^{\frac{ax^3+b}{x^3}}}{4\,\left(-b\log(f)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^3,x, algorithm="fricas")
```

```
[Out] 1/4*(3*b^2*f^a*gamma(2/3, -b*log(f)/x^3)*log(f)^2 + (x^4 + 3*b*x*
log(f))*(-b*log(f))^(2/3)*f^((a*x^3 + b)/x^3))/(-b*log(f))^(2/3)
```

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

$$\int f^{a+\frac{b}{x^3}} x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)*x**3,x)
```

```
[Out] Integral(f**(a + b/x**3)*x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^3}} x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x^3,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)*x^3, x)
```

3.169 $\int f^{a+\frac{b}{x^3}} x \, dx$

Optimal. Leaf size=34

$$\frac{1}{3}x^2 f^a \left(-\frac{b\log(f)}{x^3}\right)^{2/3} \text{Gamma}\left(-\frac{2}{3}, -\frac{b\log(f)}{x^3}\right)$$

```
[Out] (f^a*x^2*Gamma[-2/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(2/3)
)/3
```

Rubi [A] time = 0.025094, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{1}{3}x^2 f^a \left(-\frac{b\log(f)}{x^3}\right)^{2/3} \text{Gamma}\left(-\frac{2}{3}, -\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)*x,x]
```

```
[Out] (f^a*x^2*Gamma[-2/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(2/3)
)/3
```

Rubi in Sympy [A] time = 2.42791, size = 36, normalized size = 1.06

$$\frac{f^a x^2 \left(-\frac{b\log(f)}{x^3}\right)^{\frac{2}{3}} \left(-\frac{2}{3}, -\frac{b\log(f)}{x^3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)*x,x)
```

```
[Out] f**a*x**2*(-b*log(f)/x**3)**(2/3)*Gamma(-2/3, -b*log(f)/x**3)/3
```

Mathematica [A] time = 0.0273608, size = 44, normalized size = 1.29

$$\frac{1}{2}x^2 f^a \left(f^{\frac{b}{x^3}} - \left(-\frac{b\log(f)}{x^3}\right)^{2/3} \text{Gamma}\left(\frac{1}{3}, -\frac{b\log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)*x,x]
```

```
[Out] (f^a*x^2*(f^(b/x^3) - Gamma[1/3, -((b*Log[f])/x^3)]*(-((b*Log[f])
/x^3))^(2/3)))/2
```

Maple [B] time = 0.026, size = 105, normalized size = 3.1

$$-\frac{f^a}{3}(-b)^{\frac{2}{3}}(\ln(f))^{\frac{2}{3}}\left(\frac{b\pi\sqrt{3}}{x\left(\frac{2}{3}\right)}\sqrt[3]{\ln(f)}(-b)^{-\frac{2}{3}}\frac{1}{\sqrt[3]{-\frac{b\ln(f)}{x^3}}} - \frac{3x^2}{2}e^{\frac{b\ln(f)}{x^3}}(-b)^{-\frac{2}{3}}(\ln(f))^{-\frac{2}{3}} - \frac{3b}{2x}\sqrt[3]{\ln(f)}\left(\frac{1}{3}, -\frac{b\ln(f)}{x^3}\right)(-b)^{-\frac{2}{3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^3)*x,x)
```

```
[Out] -1/3*f^a*(-b)^(2/3)*ln(f)^(2/3)*(1/x/(-b)^(2/3)*ln(f)^(1/3)*b*Pi*
3^(1/2)/GAMMA(2/3)/(-b*ln(f)/x^3)^(1/3)-3/2*x^2/(-b)^(2/3)/ln(f)^
(2/3)*exp(b*ln(f)/x^3)-3/2/x/(-b)^(2/3)*ln(f)^(1/3)*b/(-b*ln(f)/x
^3)^(1/3)*GAMMA(1/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.800428, size = 63, normalized size = 1.85

$$\frac{1}{2}\,f^{a}f^{\frac{b}{x^{3}}}x^{2}+\frac{bf^{a}\,\Gamma\left(\frac{1}{3},-\frac{b\log(f)}{x^{3}}\right)\log\left(f\right)}{2\,x\left(-\frac{b\log(f)}{x^{3}}\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)*x,x, algorithm="maxima")
```

```
[Out] 1/2*f^a*f^(b/x^3)*x^2 + 1/2*b*f^a*gamma(1/3, -b*log(f)/x^3)*log(f
)/(x*(-b*log(f)/x^3)^(1/3))
```

Fricas [A] time = 0.255313, size = 69, normalized size = 2.03

$$\frac{bf^{a}\,\Gamma\left(\frac{1}{3},-\frac{b\log(f)}{x^{3}}\right)\log\left(f\right)+\left(-b\log\left(f\right)\right)^{\frac{1}{3}}f^{\frac{ax^{3}+b}{x^{3}}}x^{2}}{2\left(-b\log\left(f\right)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)*x,x, algorithm="fricas")
```

```
[Out] 1/2*(b*f^a*gamma(1/3, -b*log(f)/x^3)*log(f) + (-b*log(f))^(1/3)*f
^((a*x^3 + b)/x^3)*x^2)/(-b*log(f))^(1/3)
```

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

$$\int f^{a+\frac{b}{x^{3}}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**3)*x,x)
```

```
[Out] Integral(f**(a + b/x**3)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a+\frac{b}{x^{3}}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)*x,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)*x, x)
```

3.170 $\int f^{a+\frac{b}{x^3}}\,dx$

Optimal. Leaf size=32

$$\frac{1}{3}xf^a\sqrt[3]{-\frac{b\log(f)}{x^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{b\log(f)}{x^3}\right)$$

```
[Out] (f^a*x*Gamma[-1/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(1/3))/
3
```

Rubi [A] time = 0.0107425, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{3}xf^a\sqrt[3]{-\frac{b\log(f)}{x^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{b\log(f)}{x^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3),x]
```

```
[Out] (f^a*x*Gamma[-1/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^3))^(1/3))/
3
```

Rubi in Sympy [A] time = 1.18117, size = 34, normalized size = 1.06

$$\frac{f^a x\sqrt[3]{-\frac{b\log(f)}{x^3}}\left(-\frac{1}{3},-\frac{b\log(f)}{x^3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3),x)
```

```
[Out] f**a*x*(-b*log(f)/x**3)**(1/3)*Gamma(-1/3, -b*log(f)/x**3)/3
```

Mathematica [A] time = 0.0295981, size = 39, normalized size = 1.22

$$xf^a\left(f^{\frac{b}{x^3}}-\sqrt[3]{-\frac{b\log(f)}{x^3}}\text{Gamma}\left(\frac{2}{3},-\frac{b\log(f)}{x^3}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3),x]
```

```
[Out] f^a*x*(f^(b/x^3) - Gamma[2/3, -((b*Log[f])/x^3)]*(-((b*Log[f])/x^
3))^(1/3))
```

Maple [B] time = 0.023, size = 98, normalized size = 3.1

$$-\frac{f^a}{3}\sqrt[3]{-b}\sqrt[3]{\ln(f)}\left(3\frac{(\ln(f))^{2/3}b(2/3)}{x^2\sqrt[3]{-b}}\left(-\frac{b\ln(f)}{x^3}\right)^{-2/3}-3\frac{x}{\sqrt[3]{-b}\sqrt[3]{\ln(f)}}e^{\frac{b\ln(f)}{x^3}}-3\frac{(\ln(f))^{2/3}b}{x^2\sqrt[3]{-b}}\left(2/3,-\frac{b\ln(f)}{x^3}\right)\left(-\frac{b\ln(f)}{x^3}\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3),x)
```

```
[Out] -1/3*f^a*(-b)^(1/3)*ln(f)^(1/3)*(3/x^2/(-b)^(1/3)*ln(f)^(2/3)*b*G
AMMA(2/3)/(-b*ln(f)/x^3)^(2/3)-3*x/(-b)^(1/3)/ln(f)^(1/3)*exp(b*l
n(f)/x^3)-3/x^2/(-b)^(1/3)*ln(f)^(2/3)*b/(-b*ln(f)/x^3)^(2/3)*GAM
MA(2/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.805832, size = 58, normalized size = 1.81

$$f^a f^{\frac{b}{x^3}} x + \frac{b f^a \left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right) \log(f)}{x^2 \left(-\frac{b \log(f)}{x^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3),x, algorithm="maxima")
```

```
[Out] f^a*f^(b/x^3)*x + b*f^a*gamma(2/3, -b*log(f)/x^3)*log(f)/(x^2*(-b
*log(f)/x^3)^(2/3))
```

Fricas [A] time = 0.263657, size = 65, normalized size = 2.03

$$\frac{b f^a \left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right) \log(f) + (-b \log(f))^{\frac{2}{3}} f^{\frac{a x^3 + b}{x^3}} x}{(-b \log(f))^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3),x, algorithm="fricas")
```

```
[Out] (b*f^a*gamma(2/3, -b*log(f)/x^3)*log(f) + (-b*log(f))^(2/3)*f^((a
*x^3 + b)/x^3)*x)/(-b*log(f))^(2/3)
```

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

$$\int f^{a + \frac{b}{x^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3),x)
```

```
[Out] Integral(f**(a + b/x**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{a + \frac{b}{x^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3),x, algorithm="giac")

[Out] integrate(f^(a + b/x^3), x)
```

3.171 $\int \frac{f^{a+\frac{b}{x^3}}}{x^2}\,dx$

Optimal. Leaf size=34

$$\frac{f^a\text{Gamma}\left(\frac{1}{3},-\frac{b\log(f)}{x^3}\right)}{3x\sqrt[3]{-\frac{b\log(f)}{x^3}}}$$

```
[Out] (f^a*Gamma[1/3, -((b*Log[f])/x^3)])/(3*x*(-((b*Log[f])/x^3))^(1/3
))
```

Rubi [A] time = 0.0371087, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a\text{Gamma}\left(\frac{1}{3},-\frac{b\log(f)}{x^3}\right)}{3x\sqrt[3]{-\frac{b\log(f)}{x^3}}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^2,x]
```

```
[Out] (f^a*Gamma[1/3, -((b*Log[f])/x^3)])/(3*x*(-((b*Log[f])/x^3))^(1/3
))
```

Rubi in Sympy [A] time = 3.20659, size = 32, normalized size = 0.94

$$\frac{f^a\left(\frac{1}{3},-\frac{b\log(f)}{x^3}\right)}{3x\sqrt[3]{-\frac{b\log(f)}{x^3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**2,x)
```

```
[Out] f**a*Gamma(1/3, -b*log(f)/x**3)/(3*x*(-b*log(f)/x**3)**(1/3))
```

Mathematica [A] time = 0.0123568, size = 34, normalized size = 1.

$$\frac{f^a\text{Gamma}\left(\frac{1}{3},-\frac{b\log(f)}{x^3}\right)}{3x\sqrt[3]{-\frac{b\log(f)}{x^3}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^2,x]
```

```
[Out] (f^a*Gamma[1/3, -((b*Log[f])/x^3)])/(3*x*(-((b*Log[f])/x^3))^(1/3
))
```

Maple [B] time = 0.025, size = 82, normalized size = 2.4

$$-\frac{f^{a}}{3}\left(\frac{2\pi\sqrt{3}}{3x(2/3)}\sqrt[3]{-b}\sqrt[3]{\ln(f)}\frac{1}{\sqrt[3]{-\frac{b\ln(f)}{x^{3}}}}-\frac{1}{x}\sqrt[3]{-b}\sqrt[3]{\ln(f)}\left(\frac{1}{3},-\frac{b\ln(f)}{x^{3}}\right)\frac{1}{\sqrt[3]{-\frac{b\ln(f)}{x^{3}}}}\right)\frac{1}{\sqrt[3]{-b}}\frac{1}{\sqrt[3]{\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x^2,x)
```

```
[Out] -1/3*f^a/(-b)^(1/3)/ln(f)^(1/3)*(2/3/x*(-b)^(1/3)*ln(f)^(1/3)*Pi*
3^(1/2)/GAMMA(2/3)/(-b*ln(f)/x^3)^(1/3)-1/x*(-b)^(1/3)*ln(f)^(1/3
)/(-b*ln(f)/x^3)^(1/3)*GAMMA(1/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.826872, size = 38, normalized size = 1.12

$$\frac{f^{a}\left(\frac{1}{3},-\frac{b\log(f)}{x^{3}}\right)}{3x\left(-\frac{b\log(f)}{x^{3}}\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^2,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*gamma(1/3, -b*log(f)/x^3)/(x*(-b*log(f)/x^3)^(1/3))
```

Fricas [A] time = 0.244779, size = 30, normalized size = 0.88

$$\frac{f^{a}\left(\frac{1}{3},-\frac{b\log(f)}{x^{3}}\right)}{3\left(-b\log(f)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^2,x, algorithm="fricas")
```

```
[Out] 1/3*f^a*gamma(1/3, -b*log(f)/x^3)/(-b*log(f))^(1/3)
```

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

$$\int\frac{f^{a+\frac{b}{x^{3}}}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x**2,x)
```

```
[Out] Integral(f**(a + b/x**3)/x**2, x)
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^3}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^2,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)/x^2, x)
```

3.172 $\int \frac{f^{a+\frac{b}{x^3}}}{x^3}\,dx$

Optimal. Leaf size=34

$$\frac{f^a \text{Gamma}\left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^2\left(-\frac{b \log(f)}{x^3}\right)^{2/3}}$$

```
[Out] (f^a*Gamma[2/3, -((b*Log[f])/x^3)])/(3*x^2*(-((b*Log[f])/x^3))^(2
/3))
```

Rubi [A] time = 0.0377074, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a \text{Gamma}\left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^2\left(-\frac{b \log(f)}{x^3}\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b/x^3)/x^3,x]
```

```
[Out] (f^a*Gamma[2/3, -((b*Log[f])/x^3)])/(3*x^2*(-((b*Log[f])/x^3))^(2
/3))
```

Rubi in Sympy [A] time = 3.30166, size = 34, normalized size = 1.

$$\frac{f^a\left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^2\left(-\frac{b \log(f)}{x^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b/x**3)/x**3,x)
```

```
[Out] f**a*Gamma(2/3, -b*log(f)/x**3)/(3*x**2*(-b*log(f)/x**3)**(2/3))
```

Mathematica [A] time = 0.0140575, size = 34, normalized size = 1.

$$\frac{f^a \text{Gamma}\left(\frac{2}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^2\left(-\frac{b \log(f)}{x^3}\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b/x^3)/x^3,x]
```

```
[Out] (f^a*Gamma[2/3, -((b*Log[f])/x^3)])/(3*x^2*(-((b*Log[f])/x^3))^(2
/3))
```

Maple [B] time = 0.026, size = 78, normalized size = 2.3

$$\frac{f^a}{3\,b}\sqrt[3]{-b}\left(\frac{\left(\frac{2}{3}\right)}{x^2}\,(-b)^{\frac{2}{3}}\,(\ln(f))^{\frac{2}{3}}\left(-\frac{b\ln(f)}{x^3}\right)^{-\frac{2}{3}}-\frac{1}{x^2}\,(-b)^{\frac{2}{3}}\,(\ln(f))^{\frac{2}{3}}\left(\frac{2}{3},-\frac{b\ln(f)}{x^3}\right)\left(-\frac{b\ln(f)}{x^3}\right)^{-\frac{2}{3}}\right)(\ln(f))^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b/x^3)/x^3,x)
```

```
[Out] 1/3*f^a/b/ln(f)^(2/3)*(-b)^(1/3)*(1/x^2*(-b)^(2/3)*ln(f)^(2/3)*GA
MMA(2/3)/(-b*ln(f)/x^3)^(2/3)-1/x^2*(-b)^(2/3)*ln(f)^(2/3)/(-b*ln
(f)/x^3)^(2/3)*GAMMA(2/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.802535, size = 38, normalized size = 1.12

$$\frac{f^a\left(\frac{2}{3},-\frac{b\log(f)}{x^3}\right)}{3\,x^2\left(-\frac{b\log(f)}{x^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*gamma(2/3, -b*log(f)/x^3)/(x^2*(-b*log(f)/x^3)^(2/3))
```

Fricas [A] time = 0.253885, size = 30, normalized size = 0.88

$$\frac{f^a\left(\frac{2}{3},-\frac{b\log(f)}{x^3}\right)}{3\,(-b\log(f))^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(a + b/x^3)/x^3,x, algorithm="fricas")
```

```
[Out] 1/3*f^a*gamma(2/3, -b*log(f)/x^3)/(-b*log(f))^(2/3)
```

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

$$\int\frac{f^{a+\frac{b}{x^3}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b/x**3)/x**3,x)
```

```
[Out] Integral(f**(a + b/x**3)/x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{a+\frac{b}{x^3}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(a + b/x^3)/x^3, x)
```

3.173 $\int \frac{f^{a+\frac{b}{x^3}}}{x^5} \, dx$

Optimal. Leaf size=34

$$\frac{f^a \text{Gamma}\left(\frac{4}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^4 \left(-\frac{b \log(f)}{x^3}\right)^{4/3}}$$

```
[Out] (f^a*Gamma[4/3, -((b*Log[f])/x^3)])/(3*x^4*(-((b*Log[f])/x^3))^(4
/3))
```

Rubi [A] time = 0.0372111, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a \text{Gamma}\left(\frac{4}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^4 \left(-\frac{b \log(f)}{x^3}\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b/x^3)/x^5,x]
```

```
[Out] (f^a*Gamma[4/3, -((b*Log[f])/x^3)])/(3*x^4*(-((b*Log[f])/x^3))^(4
/3))
```

Rubi in Sympy [A] time = 3.42437, size = 34, normalized size = 1.

$$\frac{f^a \left(\frac{4}{3}, -\frac{b \log(f)}{x^3}\right)}{3x^4 \left(-\frac{b \log(f)}{x^3}\right)^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b/x**3)/x**5,x)
```

```
[Out] f**a*Gamma(4/3, -b*log(f)/x**3)/(3*x**4*(-b*log(f)/x**3)**(4/3))
```

Mathematica [A] time = 0.032804, size = 56, normalized size = 1.65

$$\frac{f^a \left(\text{Gamma}\left(\frac{1}{3}, -\frac{b \log(f)}{x^3}\right) + 3f^{\frac{b}{x^3}} \sqrt[3]{-\frac{b \log(f)}{x^3}}\right)}{9x^4 \left(-\frac{b \log(f)}{x^3}\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b/x^3)/x^5,x]
```

```
[Out] (f^a*(Gamma[1/3, -((b*Log[f])/x^3)] + 3*f^(b/x^3)*(-((b*Log[f])/x
^3))^(1/3)))/(9*x^4*(-((b*Log[f])/x^3))^(4/3))
```

Maple [B] time = 0.036, size = 112, normalized size = 3.3

$$-\frac{f^a}{3}\left(-\frac{2\pi\sqrt{3}}{9bx\,\Gamma(2/3)}(-b)^{\frac{4}{3}}\sqrt[3]{\ln(f)}\frac{1}{\sqrt[3]{-\frac{b\ln(f)}{x^3}}}+\frac{1}{bx}(-b)^{\frac{4}{3}}\sqrt[3]{\ln(f)}\mathrm{e}^{\frac{b\ln(f)}{x^3}}+\frac{1}{3bx}(-b)^{\frac{4}{3}}\sqrt[3]{\ln(f)}\,\Gamma\left(\frac{1}{3},-\frac{b\ln(f)}{x^3}\right)\frac{1}{\sqrt[3]{-\frac{b\ln(f)}{x^3}}}\right)($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b/x^3)/x^5,x)
```

```
[Out] -1/3*f^a/(-b)^(4/3)/ln(f)^(4/3)*(-2/9/x*(-b)^(4/3)*ln(f)^(1/3)/b*
Pi*3^(1/2)/GAMMA(2/3)/(-b*ln(f)/x^3)^(1/3)+1/x*(-b)^(4/3)*ln(f)^(
1/3)/b*exp(b*ln(f)/x^3)+1/3/x*(-b)^(4/3)*ln(f)^(1/3)/b/(-b*ln(f)/
x^3)^(1/3)*GAMMA(1/3,-b*ln(f)/x^3))
```

Maxima [A] time = 0.815371, size = 38, normalized size = 1.12

$$\frac{f^a\,\Gamma\left(\frac{4}{3},-\frac{b\log(f)}{x^3}\right)}{3x^4\left(-\frac{b\log(f)}{x^3}\right)^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*f^a*gamma(4/3, -b*log(f)/x^3)/(x^4*(-b*log(f)/x^3)^(4/3))
```

Fricas [A] time = 0.268955, size = 77, normalized size = 2.26

$$-\frac{f^a x\,\Gamma\left(\frac{1}{3},-\frac{b\log(f)}{x^3}\right)+3\left(-b\log(f)\right)^{\frac{1}{3}}f^{\frac{ax^3+b}{x^3}}}{9\left(-b\log(f)\right)^{\frac{1}{3}}bx\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^5,x, algorithm="fricas")
```

```
[Out] -1/9*(f^a*x*gamma(1/3, -b*log(f)/x^3) + 3*(-b*log(f))^(1/3)*f^((a
*x^3 + b)/x^3))/((-b*log(f))^(1/3)*b*x*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b/x**3)/x**5,x)
```

```
[Out] Timed out
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+\frac{b}{x^3}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(a + b/x^3)/x^5,x, algorithm="giac")

[Out] integrate(f^(a + b/x^3)/x^5, x)
```

3.174 $\int f^{a+bx^n}x^m\,dx$

Optimal. Leaf size=46

$$-\frac{f^a x^{m+1}\left(-b\log(f)x^n\right)^{-\frac{m+1}{n}}\text{Gamma}\left(\frac{m+1}{n},-b\log(f)x^n\right)}{n}$$

```
[Out] -((f^a*x^(1 + m)*Gamma[(1 + m)/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*L
og[f]))^((1 + m)/n)))
```

Rubi [A] time = 0.042839, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^a x^{m+1}\left(-b\log(f)x^n\right)^{-\frac{m+1}{n}}\text{Gamma}\left(\frac{m+1}{n},-b\log(f)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^m,x]
```

```
[Out] -((f^a*x^(1 + m)*Gamma[(1 + m)/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*L
og[f]))^((1 + m)/n)))
```

Rubi in Sympy [A] time = 3.98567, size = 41, normalized size = 0.89

$$-\frac{f^a x^{m+1}\left(-bx^n\log(f)\right)^{-\frac{m+1}{n}}\left(\frac{m+1}{n},-bx^n\log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**m,x)
```

```
[Out] -f**a*x**(m + 1)*(-b*x**n*log(f))**(-(m + 1)/n)*Gamma((m + 1)/n,
-b*x**n*log(f))/n
```

Mathematica [A] time = 0.0374799, size = 46, normalized size = 1.

$$-\frac{f^a x^{m+1}\left(-b\log(f)x^n\right)^{-\frac{m+1}{n}}\text{Gamma}\left(\frac{m+1}{n},-b\log(f)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^m,x]
```

```
[Out] -((f^a*x^(1 + m)*Gamma[(1 + m)/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*L
og[f]))^((1 + m)/n)))
```

Maple [F] time = 0.099, size = 0, normalized size = 0.

$$\int f^{a+bx^n}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^m,x)
```

```
[Out] int(f^(a+b*x^n)*x^m,x)
```

Maxima [A] time = 1.01099, size = 63, normalized size = 1.37

$$-\frac{f^{a}x^{m+1}\left(\frac{m+1}{n}, -bx^{n}\log\left(f\right)\right)}{\left(-bx^{n}\log\left(f\right)\right)^{\frac{m+1}{n}}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^m,x, algorithm="maxima")
```

```
[Out] -f^a*x^(m + 1)*gamma((m + 1)/n, -b*x^n*log(f))/((-b*x^n*log(f))^(
(m + 1)/n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{bx^{n}+a}x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^(b*x^n + a)*x^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^{n}+a}x^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^m, x)
```

3.175 $\int f^{a+bx^n} x^3 \, dx$

Optimal. Leaf size=39

$$-\frac{x^4 f^a \left(-b \log(f) x^n\right)^{-4/n} \operatorname{Gamma}\left(\frac{4}{n}, -b \log(f) x^n\right)}{n}$$

```
[Out] -((f^a*x^4*Gamma[4/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(4/n
)))
```

Rubi [A] time = 0.0432166, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{x^4 f^a \left(-b \log(f) x^n\right)^{-4/n} \operatorname{Gamma}\left(\frac{4}{n}, -b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^3,x]
```

```
[Out] -((f^a*x^4*Gamma[4/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(4/n
)))
```

Rubi in Sympy [A] time = 4.01019, size = 36, normalized size = 0.92

$$-\frac{f^a x^4 \left(-b x^n \log(f)\right)^{-\frac{4}{n}} \left(\frac{4}{n}, -b x^n \log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**3,x)
```

```
[Out] -f**a*x**4*(-b*x**n*log(f))**(-4/n)*Gamma(4/n, -b*x**n*log(f))/n
```

Mathematica [A] time = 0.0161287, size = 39, normalized size = 1.

$$-\frac{x^4 f^a \left(-b \log(f) x^n\right)^{-4/n} \operatorname{Gamma}\left(\frac{4}{n}, -b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^3,x]
```

```
[Out] -((f^a*x^4*Gamma[4/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(4/n
)))
```

Maple [F] time = 0.035, size = 0, normalized size = 0.

$$\int f^{a+bx^n} x^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^3,x)

[Out] int(f^(a+b*x^n)*x^3,x)
```

Maxima [A]   time = 0.909579, size = 55, normalized size = 1.41

$$-\frac{f^a x^4 \left(\frac{4}{n}, -bx^n \log(f)\right)}{(-bx^n \log(f))^{\frac{4}{n}} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^3,x, algorithm="maxima")

[Out] -f^a*x^4*gamma(4/n, -b*x^n*log(f))/((-b*x^n*log(f))^(4/n)*n)
```

Fricas [F]   time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{bx^n+a}x^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^3,x, algorithm="fricas")

[Out] integral(f^(b*x^n + a)*x^3, x)
```

Sympy [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**3,x)

[Out] Timed out
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^3,x, algorithm="giac")

[Out] integrate(f^(b*x^n + a)*x^3, x)
```

3.176 $\int f^{a+bx^n} x^2 \, dx$

Optimal. Leaf size=39

$$-\frac{x^3 f^a \left(-b \log(f) x^n\right)^{-3/n} \operatorname{Gamma}\left(\frac{3}{n}, -b \log(f) x^n\right)}{n}$$

```
[Out] -((f^a*x^3*Gamma[3/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(3/n
)))
```

Rubi [A] time = 0.0431708, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{x^3 f^a \left(-b \log(f) x^n\right)^{-3/n} \operatorname{Gamma}\left(\frac{3}{n}, -b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^2,x]
```

```
[Out] -((f^a*x^3*Gamma[3/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(3/n
)))
```

Rubi in Sympy [A] time = 3.89969, size = 36, normalized size = 0.92

$$-\frac{f^a x^3 \left(-bx^n \log(f)\right)^{-\frac{3}{n}} \left(\frac{3}{n}, -bx^n \log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**2,x)
```

```
[Out] -f**a*x**3*(-b*x**n*log(f))**(-3/n)*Gamma(3/n, -b*x**n*log(f))/n
```

Mathematica [A] time = 0.0160423, size = 39, normalized size = 1.

$$-\frac{x^3 f^a \left(-b \log(f) x^n\right)^{-3/n} \operatorname{Gamma}\left(\frac{3}{n}, -b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^2,x]
```

```
[Out] -((f^a*x^3*Gamma[3/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(3/n
)))
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int f^{a+bx^n} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^2,x)

[Out] int(f^(a+b*x^n)*x^2,x)
```

Maxima [A] time = 0.936997, size = 55, normalized size = 1.41

$$-\frac{f^{a}x^{3}\,\Gamma\left(\frac{3}{n},-bx^{n}\log\left(f\right)\right)}{\left(-bx^{n}\log\left(f\right)\right)^{\frac{3}{n}}\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^2,x, algorithm="maxima")

[Out] -f^a*x^3*gamma(3/n, -b*x^n*log(f))/((-b*x^n*log(f))^(3/n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{bx^{n}+a}x^{2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^2,x, algorithm="fricas")

[Out] integral(f^(b*x^n + a)*x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**2,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^{n}+a}x^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^2,x, algorithm="giac")

[Out] integrate(f^(b*x^n + a)*x^2, x)
```

3.177 $\int f^{a+bx^n} x \, dx$

Optimal. Leaf size=39

$$-\frac{x^2 f^a \left(-b \log(f) x^n\right)^{-2/n} \text{Gamma}\left(\frac{2}{n}, -b \log(f) x^n\right)}{n}$$

```
[Out] -((f^a*x^2*Gamma[2/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(2/n
)))
```

Rubi [A] time = 0.0278062, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{x^2 f^a \left(-b \log(f) x^n\right)^{-2/n} \text{Gamma}\left(\frac{2}{n}, -b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x,x]
```

```
[Out] -((f^a*x^2*Gamma[2/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(2/n
)))
```

Rubi in Sympy [A] time = 2.79841, size = 36, normalized size = 0.92

$$-\frac{f^a x^2 \left(-b x^n \log(f)\right)^{-\frac{2}{n}} \left(\frac{2}{n}, -b x^n \log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x,x)
```

```
[Out] -f**a*x**2*(-b*x**n*log(f))**(-2/n)*Gamma(2/n, -b*x**n*log(f))/n
```

Mathematica [A] time = 0.0152062, size = 39, normalized size = 1.

$$-\frac{x^2 f^a \left(-b \log(f) x^n\right)^{-2/n} \text{Gamma}\left(\frac{2}{n}, -b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x,x]
```

```
[Out] -((f^a*x^2*Gamma[2/n, -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^(2/n
)))
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int f^{a+bx^n} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x,x)
```

```
[Out] int(f^(a+b*x^n)*x,x)
```

Maxima [A] time = 0.921156, size = 55, normalized size = 1.41

$$-\frac{f^a x^2 \Gamma\left(\frac{2}{n}, -bx^n \log(f)\right)}{(-bx^n \log(f))^{\frac{2}{n}} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x,x, algorithm="maxima")
```

```
[Out] -f^a*x^2*gamma(2/n, -b*x^n*log(f))/((-b*x^n*log(f))^(2/n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{bx^n+a}x, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x,x, algorithm="fricas")
```

```
[Out] integral(f^(b*x^n + a)*x, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x, x)
```

3.178 $\int f^{a+bx^n}\,dx$

Optimal. Leaf size=35

$$-\frac{xf^a\left(-b\log(f)x^n\right)^{-1/n}\,\text{Gamma}\left(\frac{1}{n},-b\log(f)x^n\right)}{n}$$

```
[Out] -((f^a*x*Gamma[n^(-1), -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^n^(
-1)))
```

Rubi [A] time = 0.0131308, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{xf^a\left(-b\log(f)x^n\right)^{-1/n}\,\text{Gamma}\left(\frac{1}{n},-b\log(f)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n),x]
```

```
[Out] -((f^a*x*Gamma[n^(-1), -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^n^(
-1)))
```

Rubi in Sympy [A] time = 1.55941, size = 34, normalized size = 0.97

$$-\frac{f^a x\left(-bx^n\log(f)\right)^{-\frac{1}{n}}\left(\frac{1}{n},-bx^n\log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n),x)
```

```
[Out] -f**a*x*(-b*x**n*log(f))**(-1/n)*Gamma(1/n, -b*x**n*log(f))/n
```

Mathematica [A] time = 0.0110445, size = 35, normalized size = 1.

$$-\frac{xf^a\left(-b\log(f)x^n\right)^{-1/n}\,\text{Gamma}\left(\frac{1}{n},-b\log(f)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n),x]
```

```
[Out] -((f^a*x*Gamma[n^(-1), -(b*x^n*Log[f])])/(n*(-(b*x^n*Log[f]))^n^(
-1)))
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int f^{a+bx^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n),x)
```

```
[Out] int(f^(a+b*x^n),x)
```

Maxima [A] time = 0.906794, size = 47, normalized size = 1.34

$$-\frac{f^a x \left(\frac{1}{n}, -b x^n \log(f)\right)}{\left(-b x^n \log(f)\right)^{\left(\frac{1}{n}\right)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a),x, algorithm="maxima")
```

```
[Out] -f^a*x*gamma(1/n, -b*x^n*log(f))/((-b*x^n*log(f))^(1/n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{b x^n + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a),x, algorithm="fricas")
```

```
[Out] integral(f^(b*x^n + a), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{b x^n + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a), x)
```

3.179 $\int \frac{f^{a+bx^n}}{x} \, dx$

Optimal. Leaf size=15

$$\frac{f^a \text{ExpIntegralEi}\left(b \log(f) x^n\right)}{n}$$

```
[Out] (f^a*ExpIntegralEi[b*x^n*Log[f]])/n
```

Rubi [A] time = 0.037135, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{f^a \text{ExpIntegralEi}\left(b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^n)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^n*Log[f]])/n
```

Rubi in Sympy [A] time = 3.3439, size = 14, normalized size = 0.93

$$\frac{f^a \operatorname{Ei}\left(b x^n \log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b*x**n)/x,x)

[Out] f**a*Ei(b*x**n*log(f))/n
```

Mathematica [A] time = 0.00647454, size = 15, normalized size = 1.

$$\frac{f^a \text{ExpIntegralEi}\left(b \log(f) x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^n)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^n*Log[f]])/n
```

Maple [A] time = 0.036, size = 19, normalized size = 1.3

$$-\frac{f^a Ei\left(1, -b x^n \ln(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(a+b*x^n)/x,x)
```

```
[Out] -1/n*f^a*Ei(1,-b*x^n*ln(f))
```

Maxima [A] time = 0.840945, size = 20, normalized size = 1.33

$$\frac{f^a \text{Ei}\left(bx^n \log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x,x, algorithm="maxima")
```

```
[Out] f^a*Ei(b*x^n*log(f))/n
```

Fricas [A] time = 0.252947, size = 20, normalized size = 1.33

$$\frac{f^a \text{Ei}\left(bx^n \log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x,x, algorithm="fricas")
```

```
[Out] f^a*Ei(b*x^n*log(f))/n
```

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

$$\int \frac{f^{a+bx^n}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)/x,x)
```

```
[Out] Integral(f**(a + b*x**n)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^n+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)/x, x)
```

3.180 $\int \frac{f^{a+bx^n}}{x^2}\,dx$

Optimal. Leaf size=37

$$-\frac{f^a(-b\log(f)x^n)^{\frac{1}{n}}\,\mathrm{Gamma}\left(-\frac{1}{n},-b\log(f)x^n\right)}{nx}$$

```
[Out] -((f^a*Gamma[-n^(-1), -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^n^(-1))/
(n*x))
```

Rubi [A] time = 0.0406282, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{f^a(-b\log(f)x^n)^{\frac{1}{n}}\,\mathrm{Gamma}\left(-\frac{1}{n},-b\log(f)x^n\right)}{nx}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)/x^2,x]
```

```
[Out] -((f^a*Gamma[-n^(-1), -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^n^(-1))/
(n*x))
```

Rubi in Sympy [A] time = 3.78294, size = 36, normalized size = 0.97

$$-\frac{f^a\left(-bx^n\log(f)\right)^{\frac{1}{n}}\left(-\frac{1}{n},-bx^n\log(f)\right)}{nx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)/x**2,x)
```

```
[Out] -f**a*(-b*x**n*log(f))**(1/n)*Gamma(-1/n, -b*x**n*log(f))/(n*x)
```

Mathematica [A] time = 0.0146427, size = 37, normalized size = 1.

$$-\frac{f^a(-b\log(f)x^n)^{\frac{1}{n}}\,\mathrm{Gamma}\left(-\frac{1}{n},-b\log(f)x^n\right)}{nx}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)/x^2,x]
```

```
[Out] -((f^a*Gamma[-n^(-1), -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^n^(-1))/
(n*x))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \frac{f^{a+bx^n}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)/x^2,x)

[Out] int(f^(a+b*x^n)/x^2,x)
```

Maxima [A] time = 0.943157, size = 50, normalized size = 1.35

$$-\frac{\left(-bx^n \log\left(f\right)\right)^{\left(\frac{1}{n}\right)} f^a \left(-\frac{1}{n}, -bx^n \log\left(f\right)\right)}{nx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^2,x, algorithm="maxima")

[Out] -(-b*x^n*log(f))^(1/n)*f^a*gamma(-1/n, -b*x^n*log(f))/(n*x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{bx^n+a}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^2,x, algorithm="fricas")

[Out] integral(f^(b*x^n + a)/x^2, x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)/x**2,x)

[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^n+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^2,x, algorithm="giac")

[Out] integrate(f^(b*x^n + a)/x^2, x)
```

3.181 $\int \frac{f^{a+bx^n}}{x^3}\,dx$

Optimal. Leaf size=39

$$-\frac{f^a\left(-b\log(f)x^n\right)^{2/n}\operatorname{Gamma}\left(-\frac{2}{n},-b\log(f)x^n\right)}{nx^2}$$

```
[Out] -((f^a*Gamma[-2/n, -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^(2/n))/(n*x
^2))
```

Rubi [A] time = 0.0413572, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^a\left(-b\log(f)x^n\right)^{2/n}\operatorname{Gamma}\left(-\frac{2}{n},-b\log(f)x^n\right)}{nx^2}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^n)/x^3,x]
```

```
[Out] -((f^a*Gamma[-2/n, -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^(2/n))/(n*x
^2))
```

Rubi in Sympy [A] time = 3.54974, size = 37, normalized size = 0.95

$$-\frac{f^a\left(-bx^n\log(f)\right)^{\frac{2}{n}}\left(-\frac{2}{n},-bx^n\log(f)\right)}{nx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b*x**n)/x**3,x)
```

```
[Out] -f**a*(-b*x**n*log(f))**(2/n)*Gamma(-2/n, -b*x**n*log(f))/(n*x**2
)
```

Mathematica [A] time = 0.0182538, size = 39, normalized size = 1.

$$-\frac{f^a\left(-b\log(f)x^n\right)^{2/n}\operatorname{Gamma}\left(-\frac{2}{n},-b\log(f)x^n\right)}{nx^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^n)/x^3,x]
```

```
[Out] -((f^a*Gamma[-2/n, -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^(2/n))/(n*x
^2))
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int \frac{f^{a+bx^n}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)/x^3,x)
```

```
[Out] int(f^(a+b*x^n)/x^3,x)
```

Maxima [A] time = 0.935543, size = 53, normalized size = 1.36

$$-\frac{\left(-bx^n\log\left(f\right)\right)^{\frac{2}{n}}f^a\,\Gamma\left(-\frac{2}{n},-bx^n\log\left(f\right)\right)}{nx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^3,x, algorithm="maxima")
```

```
[Out] -(-b*x^n*log(f))^(2/n)*f^a*gamma(-2/n, -b*x^n*log(f))/(n*x^2)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{bx^n+a}}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^3,x, algorithm="fricas")
```

```
[Out] integral(f^(b*x^n + a)/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)/x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^n+a}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)/x^3, x)
```

3.182 $\int \frac{f^{a+bx^n}}{x^4} \, dx$

Optimal. Leaf size=39

$$-\frac{f^a \left(-b \log(f) x^n\right)^{3/n} \operatorname{Gamma}\left(-\frac{3}{n}, -b \log(f) x^n\right)}{n x^3}$$

```
[Out] -((f^a*Gamma[-3/n, -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^(3/n))/(n*x
^3))
```

Rubi [A] time = 0.0409617, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{f^a \left(-b \log(f) x^n\right)^{3/n} \operatorname{Gamma}\left(-\frac{3}{n}, -b \log(f) x^n\right)}{n x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)/x^4,x]
```

```
[Out] -((f^a*Gamma[-3/n, -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^(3/n))/(n*x
^3))
```

Rubi in Sympy [A] time = 3.62836, size = 37, normalized size = 0.95

$$-\frac{f^a \left(-b x^n \log(f)\right)^{\frac{3}{n}} \left(-\frac{3}{n}, -b x^n \log(f)\right)}{n x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)/x**4,x)
```

```
[Out] -f**a*(-b*x**n*log(f))**(3/n)*Gamma(-3/n, -b*x**n*log(f))/(n*x**3
)
```

Mathematica [A] time = 0.0179184, size = 39, normalized size = 1.

$$-\frac{f^a \left(-b \log(f) x^n\right)^{3/n} \operatorname{Gamma}\left(-\frac{3}{n}, -b \log(f) x^n\right)}{n x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)/x^4,x]
```

```
[Out] -((f^a*Gamma[-3/n, -(b*x^n*Log[f])]*(-(b*x^n*Log[f]))^(3/n))/(n*x
^3))
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int \frac{f^{a+bx^n}}{x^4} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)/x^4,x)

[Out] int(f^(a+b*x^n)/x^4,x)
```

Maxima [A] time = 0.949934, size = 53, normalized size = 1.36

$$-\frac{\left(-bx^n\log\left(f\right)\right)^{\frac{3}{n}}f^a\,\Gamma\left(-\frac{3}{n},-bx^n\log\left(f\right)\right)}{nx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^4,x, algorithm="maxima")

[Out] -(-b*x^n*log(f))^(3/n)*f^a*gamma(-3/n, -b*x^n*log(f))/(n*x^3)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{bx^n+a}}{x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^4,x, algorithm="fricas")

[Out] integral(f^(b*x^n + a)/x^4, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)/x**4,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{f^{bx^n+a}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x^4,x, algorithm="giac")

[Out] integrate(f^(b*x^n + a)/x^4, x)
```

3.183 $\int f^{a+bx^n} x^{-1+3n}\, dx$

Optimal. Leaf size=71

$$\frac{2f^{a+bx^n}}{b^3 n \log^3(f)} - \frac{2x^n f^{a+bx^n}}{b^2 n \log^2(f)} + \frac{x^{2n} f^{a+bx^n}}{bn \log(f)}$$

```
[Out] (2*f^(a + b*x^n))/(b^3*n*Log[f]^3) - (2*f^(a + b*x^n)*x^n)/(b^2*n
*Log[f]^2) + (f^(a + b*x^n)*x^(2*n))/(b*n*Log[f])
```

Rubi [A] time = 0.130846, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{2f^{a+bx^n}}{b^3 n \log^3(f)} - \frac{2x^n f^{a+bx^n}}{b^2 n \log^2(f)} + \frac{x^{2n} f^{a+bx^n}}{bn \log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 + 3*n),x]
```

```
[Out] (2*f^(a + b*x^n))/(b^3*n*Log[f]^3) - (2*f^(a + b*x^n)*x^n)/(b^2*n
*Log[f]^2) + (f^(a + b*x^n)*x^(2*n))/(b*n*Log[f])
```

Rubi in Sympy [A] time = 12.7153, size = 63, normalized size = 0.89

$$\frac{f^{a+bx^n} x^{2n}}{bn \log(f)} - \frac{2f^{a+bx^n} x^n}{b^2 n \log(f)^2} + \frac{2f^{a+bx^n}}{b^3 n \log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1+3*n),x)
```

```
[Out] f**(a + b*x**n)*x**(2*n)/(b*n*log(f)) - 2*f**(a + b*x**n)*x**n/(b
**2*n*log(f)**2) + 2*f**(a + b*x**n)/(b**3*n*log(f)**3)
```

Mathematica [A] time = 0.0217131, size = 43, normalized size = 0.61

$$\frac{f^{a+bx^n}\left(b^2 \log^2(f) x^{2n} - 2b \log(f) x^n + 2\right)}{b^3 n \log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 + 3*n),x]
```

```
[Out] (f^(a + b*x^n)*(2 - 2*b*x^n*Log[f] + b^2*x^(2*n)*Log[f]^2))/(b^3*
n*Log[f]^3)
```

Maple [A] time = 0.03, size = 44, normalized size = 0.6

$$\frac{\left((x^n)^2 b^2 (\ln(f))^2 - 2\,bx^n \ln(f) + 2\right) f^{a+bx^n}}{(\ln(f))^3 b^3 n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1+3*n),x)
```

```
[Out] ((x^n)^2*b^2*ln(f)^2-2*b*x^n*ln(f)+2)/b^3/ln(f)^3/n*f^(a+b*x^n)
```

Maxima [A] time = 0.840363, size = 69, normalized size = 0.97

$$\frac{\left(b^{2} f^{a} x^{2 n} \log \left(f\right)^{2} - 2 b f^{a} x^{n} \log \left(f\right) + 2 f^{a}\right) f^{b x^{n}}}{b^{3} n \log \left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(3*n - 1),x, algorithm="maxima")
```

```
[Out] (b^2*f^a*x^(2*n)*log(f)^2 - 2*b*f^a*x^n*log(f) + 2*f^a)*f^(b*x^n)
/(b^3*n*log(f)^3)
```

Fricas [A] time = 0.256921, size = 63, normalized size = 0.89

$$\frac{\left(b^{2} x^{2 n} \log \left(f\right)^{2} - 2 b x^{n} \log \left(f\right) + 2\right) e^{\left(b x^{n} \log\left(f\right) + a \log\left(f\right)\right)}}{b^{3} n \log \left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(3*n - 1),x, algorithm="fricas")
```

```
[Out] (b^2*x^(2*n)*log(f)^2 - 2*b*x^n*log(f) + 2)*e^(b*x^n*log(f) + a*l
og(f))/(b^3*n*log(f)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1+3*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{b x^{n} + a} x^{3 n - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(3*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(3*n - 1), x)
```

3.184 $\int f^{a+bx^n} x^{-1+2n}\, dx$

Optimal. Leaf size=45

$$\frac{x^n f^{a+bx^n}}{bn\log(f)} - \frac{f^{a+bx^n}}{b^2 n\log^2(f)}$$

```
[Out] -(f^(a + b*x^n)/(b^2*n*Log[f]^2)) + (f^(a + b*x^n)*x^n)/(b*n*Log[
f])
```

Rubi [A] time = 0.0805026, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{x^n f^{a+bx^n}}{bn\log(f)} - \frac{f^{a+bx^n}}{b^2 n\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 + 2*n),x]
```

```
[Out] -(f^(a + b*x^n)/(b^2*n*Log[f]^2)) + (f^(a + b*x^n)*x^n)/(b*n*Log[
f])
```

Rubi in Sympy [A] time = 7.2798, size = 36, normalized size = 0.8

$$\frac{f^{a+bx^n} x^n}{bn\log(f)} - \frac{f^{a+bx^n}}{b^2 n\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1+2*n),x)
```

```
[Out] f**(a + b*x**n)*x**n/(b*n*log(f)) - f**(a + b*x**n)/(b**2*n*log(f
)**2)
```

Mathematica [A] time = 0.0157486, size = 29, normalized size = 0.64

$$\frac{f^{a+bx^n}(b\log(f)x^n - 1)}{b^2 n\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 + 2*n),x]
```

```
[Out] (f^(a + b*x^n)*(-1 + b*x^n*Log[f]))/(b^2*n*Log[f]^2)
```

Maple [A] time = 0.05, size = 56, normalized size = 1.2

$$\frac{e^{n\ln(x)} e^{\left(a+be^{n\ln(x)}\right)\ln(f)}}{\ln(f)\,bn} - \frac{e^{\left(a+be^{n\ln(x)}\right)\ln(f)}}{b^2 n(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1+2*n),x)
```

```
[Out] 1/ln(f)/b/n*exp(n*ln(x))*exp((a+b*exp(n*ln(x)))*ln(f))-1/ln(f)^2/
b^2/n*exp((a+b*exp(n*ln(x)))*ln(f))
```

Maxima [A] time = 0.814474, size = 46, normalized size = 1.02

$$\frac{\left(bf^{a}x^{n}\log\left(f\right)-f^{a}\right)f^{bx^{n}}}{b^{2}n\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(2*n - 1),x, algorithm="maxima")
```

```
[Out] (b*f^a*x^n*log(f) - f^a)*f^(b*x^n)/(b^2*n*log(f)^2)
```

Fricas [A] time = 0.256017, size = 45, normalized size = 1.

$$\frac{\left(bx^{n}\log\left(f\right)-1\right)e^{\left(bx^{n}\log\left(f\right)+a\log\left(f\right)\right)}}{b^{2}n\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(2*n - 1),x, algorithm="fricas")
```

```
[Out] (b*x^n*log(f) - 1)*e^(b*x^n*log(f) + a*log(f))/(b^2*n*log(f)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1+2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^{n}+a}x^{2\,n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(2*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(2*n - 1), x)
```

3.185 $\int f^{a+bx^n} x^{-1+n} \, dx$

Optimal. Leaf size=20

$$\frac{f^{a+bx^n}}{bn\log(f)}$$

```
[Out] f^(a + b*x^n)/(b*n*Log[f])
```

Rubi [A] time = 0.0377487, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{f^{a+bx^n}}{bn\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 + n),x]

[Out] f^(a + b*x^n)/(b*n*Log[f])
```

Rubi in Sympy [A] time = 3.59485, size = 14, normalized size = 0.7

$$\frac{f^{a+bx^n}}{bn\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1+n),x)

[Out] f**(a + b*x**n)/(b*n*log(f))
```

Mathematica [A] time = 0.00487654, size = 20, normalized size = 1.

$$\frac{f^{a+bx^n}}{bn\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 + n),x]

[Out] f^(a + b*x^n)/(b*n*Log[f])
```

Maple [A] time = 0.033, size = 25, normalized size = 1.3

$$\frac{e^{\left(a+be^{n\ln(x)}\right)\ln(f)}}{\ln(f)\,bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1+n),x)
```

```
[Out] 1/ln(f)/b/n*exp((a+b*exp(n*ln(x)))*ln(f))
```

Maxima [A] time = 0.794468, size = 27, normalized size = 1.35

$$\frac{f^{bx^n+a}}{bn\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(n - 1),x, algorithm="maxima")
```

```
[Out] f^(b*x^n + a)/(b*n*log(f))
```

Fricas [A] time = 0.265244, size = 32, normalized size = 1.6

$$\frac{e^{(bx^n\log(f)+a\log(f))}}{bn\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(n - 1),x, algorithm="fricas")
```

```
[Out] e^(b*x^n*log(f) + a*log(f))/(b*n*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1+n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224897, size = 27, normalized size = 1.35

$$\frac{f^{bx^n+a}}{bn\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(n - 1),x, algorithm="giac")
```

```
[Out] f^(b*x^n + a)/(b*n*ln(f))
```

3.186 $\int \frac{f^{a+bx^n}}{x}\,dx$

Optimal. Leaf size=15

$$\frac{f^a\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{n}$$

```
[Out] (f^a*ExpIntegralEi[b*x^n*Log[f]])/n
```

Rubi [A] time = 0.0370038, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{f^a\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x^n)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^n*Log[f]])/n
```

Rubi in Sympy [A] time = 3.25502, size = 14, normalized size = 0.93

$$\frac{f^a\,\text{Ei}\left(bx^n\log\left(f\right)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(a+b*x**n)/x,x)

[Out] f**a*Ei(b*x**n*log(f))/n
```

Mathematica [A] time = 0.00479463, size = 15, normalized size = 1.

$$\frac{f^a\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x^n)/x,x]

[Out] (f^a*ExpIntegralEi[b*x^n*Log[f]])/n
```

Maple [A] time = 0., size = 19, normalized size = 1.3

$$-\frac{f^a Ei\left(1,-bx^n\ln\left(f\right)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(a+b*x^n)/x,x)
```

```
[Out] -1/n*f^a*Ei(1,-b*x^n*ln(f))
```

Maxima [A] time = 0.87187, size = 20, normalized size = 1.33

$$\frac{f^a \text{Ei}\left(bx^n \log\left(f\right)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x,x, algorithm="maxima")
```

```
[Out] f^a*Ei(b*x^n*log(f))/n
```

Fricas [A] time = 0.272462, size = 20, normalized size = 1.33

$$\frac{f^a \text{Ei}\left(bx^n \log\left(f\right)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x,x, algorithm="fricas")
```

```
[Out] f^a*Ei(b*x^n*log(f))/n
```

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

$$\int \frac{f^{a+bx^n}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)/x,x)
```

```
[Out] Integral(f**(a + b*x**n)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{bx^n+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)/x, x)
```

3.187 $\int f^{a+bx^n} x^{-1-n}\,dx$

Optimal. Leaf size=38

$$\frac{bf^a\log(f)\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{n}-\frac{x^{-n}f^{a+bx^n}}{n}$$

```
[Out] -(f^(a + b*x^n)/(n*x^n)) + (b*f^a*ExpIntegralEi[b*x^n*Log[f]]*Log
[f])/n
```

Rubi [A] time = 0.0772465, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{bf^a\log(f)\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{n}-\frac{x^{-n}f^{a+bx^n}}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 - n),x]
```

```
[Out] -(f^(a + b*x^n)/(n*x^n)) + (b*f^a*ExpIntegralEi[b*x^n*Log[f]]*Log
[f])/n
```

Rubi in Sympy [A] time = 5.79894, size = 32, normalized size = 0.84

$$\frac{bf^a\log(f)\operatorname{Ei}\left(bx^n\log(f)\right)}{n}-\frac{f^{a+bx^n}x^{-n}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1-n),x)
```

```
[Out] b*f**a*log(f)*Ei(b*x**n*log(f))/n - f**(a + b*x**n)*x**(-n)/n
```

Mathematica [A] time = 0.0195919, size = 38, normalized size = 1.

$$\frac{bf^a\log(f)\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{n}-\frac{x^{-n}f^{a+bx^n}}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 - n),x]
```

```
[Out] -(f^(a + b*x^n)/(n*x^n)) + (b*f^a*ExpIntegralEi[b*x^n*Log[f]]*Log
[f])/n
```

Maple [A] time = 0.05, size = 42, normalized size = 1.1

$$-\frac{f^{a+bx^n}}{nx^n}-\frac{b\ln(f)f^aEi(1,-bx^n\ln(f))}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1-n),x)
```

```
[Out] -f^(a+b*x^n)/n/(x^n)-1/n*ln(f)*b*f^a*Ei(1,-b*x^n*ln(f))
```

Maxima [A] time = 1.07261, size = 27, normalized size = 0.71

$$\frac{bf^a\,(-1,-bx^n\log(f))\log(f)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-n - 1),x, algorithm="maxima")
```

```
[Out] b*f^a*gamma(-1, -b*x^n*log(f))*log(f)/n
```

Fricas [A] time = 0.256526, size = 58, normalized size = 1.53

$$\frac{bf^ax^n\text{Ei}\,(bx^n\log(f))\log(f)-e^{(bx^n\log(f)+a\log(f))}}{nx^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-n - 1),x, algorithm="fricas")
```

```
[Out] (b*f^a*x^n*Ei(b*x^n*log(f))*log(f) - e^(b*x^n*log(f) + a*log(f)))
/(n*x^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}x^{-n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(-n - 1), x)
```

3.188 $\int f^{a+bx^n}x^{-1-2n}\,dx$

Optimal. Leaf size=71

$$\frac{b^2f^a\log^2(f)\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{2n}-\frac{x^{-2n}f^{a+bx^n}}{2n}-\frac{b\log(f)x^{-n}f^{a+bx^n}}{2n}$$

```
[Out] -f^(a + b*x^n)/(2*n*x^(2*n)) - (b*f^(a + b*x^n)*Log[f])/(2*n*x^n)
 + (b^2*f^a*ExpIntegralEi[b*x^n*Log[f]]*Log[f]^2)/(2*n)
```

Rubi [A] time = 0.123512, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{b^2f^a\log^2(f)\text{ExpIntegralEi}\left(b\log(f)x^n\right)}{2n}-\frac{x^{-2n}f^{a+bx^n}}{2n}-\frac{b\log(f)x^{-n}f^{a+bx^n}}{2n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 - 2*n),x]
```

```
[Out] -f^(a + b*x^n)/(2*n*x^(2*n)) - (b*f^(a + b*x^n)*Log[f])/(2*n*x^n)
 + (b^2*f^a*ExpIntegralEi[b*x^n*Log[f]]*Log[f]^2)/(2*n)
```

Rubi in Sympy [A] time = 9.70147, size = 61, normalized size = 0.86

$$\frac{b^2f^a\log\left(f\right)^2\text{Ei}\left(bx^n\log\left(f\right)\right)}{2n}-\frac{bf^{a+bx^n}x^{-n}\log\left(f\right)}{2n}-\frac{f^{a+bx^n}x^{-2n}}{2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1-2*n),x)
```

```
[Out] b**2*f**a*log(f)**2*Ei(b*x**n*log(f))/(2*n) - b*f**(a + b*x**n)*x
**(-n)*log(f)/(2*n) - f**(a + b*x**n)*x**(-2*n)/(2*n)
```

Mathematica [A] time = 0.0442463, size = 55, normalized size = 0.77

$$\frac{f^ax^{-2n}\left(b^2\log^2(f)x^{2n}\text{ExpIntegralEi}\left(b\log(f)x^n\right)-f^{bx^n}\left(b\log(f)x^n+1\right)\right)}{2n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 - 2*n),x]
```

```
[Out] (f^a*(b^2*x^(2*n)*ExpIntegralEi[b*x^n*Log[f]]*Log[f]^2 - f^(b*x^n
)*(1 + b*x^n*Log[f])))/(2*n*x^(2*n))
```

Maple [A] time = 0.069, size = 68, normalized size = 1.

$$-\frac{f^{a+bx^n}}{2\,n\left(x^n\right)^2}-\frac{bf^{a+bx^n}\ln\left(f\right)}{2\,nx^n}-\frac{\left(\ln\left(f\right)\right)^2b^2f^aEi\left(1,-bx^n\ln\left(f\right)\right)}{2\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1-2*n),x)
```

```
[Out] -1/2/n*f^(a+b*x^n)/(x^n)^2-1/2*b*f^(a+b*x^n)*ln(f)/n/(x^n)-1/2/n*
b^2*ln(f)^2*f^a*Ei(1,-b*x^n*ln(f))
```

Maxima [A] time = 1.24584, size = 34, normalized size = 0.48

$$-\frac{b^2 f^a\,(-2, -bx^n \log(f))\log(f)^2}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-2*n - 1),x, algorithm="maxima")
```

```
[Out] -b^2*f^a*gamma(-2, -b*x^n*log(f))*log(f)^2/n
```

Fricas [A] time = 0.266108, size = 82, normalized size = 1.15

$$\frac{b^2 f^a x^{2n} \text{Ei}\,(bx^n \log(f))\log(f)^2 - (bx^n \log(f) + 1)e^{(bx^n \log(f) + a\log(f))}}{2\,nx^{2\,n}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-2*n - 1),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*f^a*x^(2*n)*Ei(b*x^n*log(f))*log(f)^2 - (b*x^n*log(f) +
1)*e^(b*x^n*log(f) + a*log(f)))/(n*x^(2*n))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1-2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n + a} x^{-2\,n - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-2*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(-2*n - 1), x)
```

3.189 $\int f^{a+bx^n} x^{-1+\frac{5n}{2}}\,dx$

Optimal. Leaf size=104

$$\frac{3\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{4b^{5/2}n\log^{\frac{5}{2}}(f)}-\frac{3x^{n/2}f^{a+bx^n}}{2b^2n\log^2(f)}+\frac{x^{3n/2}f^{a+bx^n}}{bn\log(f)}$$

```
[Out] (3*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqrt[Log[f]]])/(4*b^(5/2)*n*
Log[f]^(5/2)) - (3*f^(a + b*x^n)*x^(n/2))/(2*b^2*n*Log[f]^2) + (f
^(a + b*x^n)*x^((3*n)/2))/(b*n*Log[f])
```

Rubi [A] time = 0.179746, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{3\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{4b^{5/2}n\log^{\frac{5}{2}}(f)}-\frac{3x^{n/2}f^{a+bx^n}}{2b^2n\log^2(f)}+\frac{x^{3n/2}f^{a+bx^n}}{bn\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 + (5*n)/2),x]
```

```
[Out] (3*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqrt[Log[f]]])/(4*b^(5/2)*n*
Log[f]^(5/2)) - (3*f^(a + b*x^n)*x^(n/2))/(2*b^2*n*Log[f]^2) + (f
^(a + b*x^n)*x^((3*n)/2))/(b*n*Log[f])
```

Rubi in Sympy [A] time = 16.0325, size = 92, normalized size = 0.88

$$\frac{f^{a+bx^n}x^{\frac{3n}{2}}}{bn\log(f)}-\frac{3f^{a+bx^n}x^{\frac{n}{2}}}{2b^2n\log(f)^2}+\frac{3\sqrt{\pi}f^a\operatorname{erfi}\left(\sqrt{b}x^{\frac{n}{2}}\sqrt{\log(f)}\right)}{4b^{\frac{5}{2}}n\log(f)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1+5/2*n),x)
```

```
[Out] f**(a + b*x**n)*x**(3*n/2)/(b*n*log(f)) - 3*f**(a + b*x**n)*x**(n
/2)/(2*b**2*n*log(f)**2) + 3*sqrt(pi)*f**a*erfi(sqrt(b)*x**(n/2)*
sqrt(log(f)))/(4*b**(5/2)*n*log(f)**(5/2))
```

Mathematica [A] time = 0.111449, size = 107, normalized size = 1.03

$$\frac{f^ax^{n/2}\left(3\sqrt{\pi}\text{Erf}\left(\sqrt{-b\log(f)x^n}\right)-4f^{bx^n}\left(-b\log(f)x^n\right)^{3/2}-3\left(2f^{bx^n}\sqrt{-b\log(f)x^n}+\sqrt{\pi}\right)\right)}{4b^2n\log^2(f)\sqrt{-b\log(f)x^n}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 + (5*n)/2),x]
```

```
[Out] (f^a*x^(n/2)*(3*Sqrt[Pi]*Erf[Sqrt[-(b*x^n*Log[f])]] - 4*f^(b*x^n)
*(-(b*x^n*Log[f]))^(3/2) - 3*(Sqrt[Pi] + 2*f^(b*x^n)*Sqrt[-(b*x^n
*Log[f])])))/(4*b^2*n*Log[f]^2*Sqrt[-(b*x^n*Log[f])])
```

Maple [A] time = 0.072, size = 96, normalized size = 0.9

$$\frac{f^{a} f^{b x^{n}}}{\ln (f) b n} \left(x^{\frac{n}{2}}\right)^{3}-\frac{3 f^{a} f^{b x^{n}}}{2 n (\ln (f))^{2} b^{2}} x^{\frac{n}{2}}+\frac{3 f^{a} \sqrt{\pi}}{4 n (\ln (f))^{2} b^{2}} Erf\left(\sqrt{-b \ln (f)} x^{\frac{n}{2}}\right) \frac{1}{\sqrt{-b \ln (f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1+5/2*n),x)
```

```
[Out] f^a/n/ln(f)/b*(x^(1/2*n))^3*f^(b*x^n)-3/2*f^a/n/ln(f)^2/b^2*x^(1/
2*n)*f^(b*x^n)+3/4*f^a/n/ln(f)^2/b^2*Pi^(1/2)/(-b*ln(f))^(1/2)*er
f((-b*ln(f))^(1/2)*x^(1/2*n))
```

Maxima [A] time = 1.07717, size = 45, normalized size = 0.43

$$-\frac{f^{a} x^{\frac{5}{2} n} \Gamma\left(\frac{5}{2},-b x^{n} \log (f)\right)}{\left(-b x^{n} \log (f)\right)^{\frac{5}{2}} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(5/2*n - 1),x, algorithm="maxima")
```

```
[Out] -f^a*x^(5/2*n)*gamma(5/2, -b*x^n*log(f))/((-b*x^n*log(f))^(5/2)*n
)
```

Fricas [A] time = 0.260867, size = 111, normalized size = 1.07

$$\frac{3 \sqrt{\pi} f^{a} \operatorname{erf}\left(\sqrt{-b \log (f)} x^{\frac{1}{2} n}\right)+2 \left(2 b x^{\frac{3}{2} n} \log (f)-3 x^{\frac{1}{2} n}\right) \sqrt{-b \log (f)} e^{\left(b x^{n} \log (f)+a \log (f)\right)}}{4 \sqrt{-b \log (f)} b^{2} n \log (f)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(5/2*n - 1),x, algorithm="fricas")
```

```
[Out] 1/4*(3*sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x^(1/2*n)) + 2*(2*b*x^(3/
2*n)*log(f) - 3*x^(1/2*n))*sqrt(-b*log(f))*e^(b*x^n*log(f) + a*lo
g(f)))/(sqrt(-b*log(f))*b^2*n*log(f)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1+5/2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}x^{\frac{5}{2}n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(5/2*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(5/2*n - 1), x)
```

3.190 $\int f^{a+bx^n} x^{-1+\frac{3n}{2}} \, dx$

Optimal. Leaf size=74

$$\frac{x^{n/2} f^{a+bx^n}}{bn \log(f)} - \frac{\sqrt{\pi} f^a \text{Erfi}\left(\sqrt{b}\sqrt{\log(f)} x^{n/2}\right)}{2b^{3/2} n \log^{\frac{3}{2}}(f)}$$

```
[Out] -(f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqrt[Log[f]]])/(2*b^(3/2)*n*L
og[f]^(3/2)) + (f^(a + b*x^n)*x^(n/2))/(b*n*Log[f])
```

Rubi [A] time = 0.111805, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{x^{n/2} f^{a+bx^n}}{bn \log(f)} - \frac{\sqrt{\pi} f^a \text{Erfi}\left(\sqrt{b}\sqrt{\log(f)} x^{n/2}\right)}{2b^{3/2} n \log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 + (3*n)/2),x]
```

```
[Out] -(f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqrt[Log[f]]])/(2*b^(3/2)*n*L
og[f]^(3/2)) + (f^(a + b*x^n)*x^(n/2))/(b*n*Log[f])
```

Rubi in Sympy [A] time = 10.223, size = 61, normalized size = 0.82

$$\frac{f^{a+bx^n} x^{\frac{n}{2}}}{bn \log(f)} - \frac{\sqrt{\pi} f^a \operatorname{erfi}\left(\sqrt{b} x^{\frac{n}{2}} \sqrt{\log(f)}\right)}{2b^{\frac{3}{2}} n \log(f)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1+3/2*n),x)
```

```
[Out] f**(a + b*x**n)*x**(n/2)/(b*n*log(f)) - sqrt(pi)*f**a*erfi(sqrt(b
)*x**(n/2)*sqrt(log(f)))/(2*b**(3/2)*n*log(f)**(3/2))
```

Mathematica [A] time = 0.0639688, size = 76, normalized size = 1.03

$$-\frac{f^a x^{3n/2} \left(-\sqrt{\pi} \text{Erf}\left(\sqrt{-b \log(f) x^n}\right) + 2 f^{bx^n} \sqrt{-b \log(f) x^n} + \sqrt{\pi}\right)}{2n \left(-b \log(f) x^n\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 + (3*n)/2),x]
```

```
[Out] -(f^a*x^((3*n)/2)*(Sqrt[Pi] - Sqrt[Pi]*Erf[Sqrt[-(b*x^n*Log[f])]]
 + 2*f^(b*x^n)*Sqrt[-(b*x^n*Log[f])]))/(2*n*(-(b*x^n*Log[f]))^(3/
2))
```

Maple [A] time = 0.049, size = 67, normalized size = 0.9

$$\frac{f^{a} f^{b x^{n}}}{\ln(f) b n} x^{\frac{n}{2}} - \frac{f^{a} \sqrt{\pi}}{2 \ln(f) b n} Erf\left(\sqrt{-b \ln(f)} x^{\frac{n}{2}}\right) \frac{1}{\sqrt{-b \ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1+3/2*n),x)
```

```
[Out] 1/n*f^a/ln(f)/b*x^(1/2*n)*f^(b*x^n)-1/2/n*f^a/ln(f)/b*Pi^(1/2)/(-
b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x^(1/2*n))
```

Maxima [A] time = 1.05466, size = 45, normalized size = 0.61

$$-\frac{f^{a} x^{\frac{3}{2} n} \left(\frac{3}{2}, -b x^{n} \log(f)\right)}{\left(-b x^{n} \log(f)\right)^{\frac{3}{2}} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(3/2*n - 1),x, algorithm="maxima")
```

```
[Out] -f^a*x^(3/2*n)*gamma(3/2, -b*x^n*log(f))/((-b*x^n*log(f))^(3/2)*n
)
```

Fricas [A] time = 0.292674, size = 92, normalized size = 1.24

$$-\frac{\sqrt{\pi} f^{a} \operatorname{erf}\left(\sqrt{-b \log(f)} x^{\frac{1}{2} n}\right) - 2 \sqrt{-b \log(f)} x^{\frac{1}{2} n} e^{\left(b x^{n} \log(f) + a \log(f)\right)}}{2 \sqrt{-b \log(f)} b n \log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(3/2*n - 1),x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x^(1/2*n)) - 2*sqrt(-b*log
(f))*x^(1/2*n)*e^(b*x^n*log(f) + a*log(f)))/(sqrt(-b*log(f))*b*n*
log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1+3/2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{b x^{n} + a} x^{\frac{3}{2} n - 1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(3/2*n - 1),x, algorithm="giac")

[Out] integrate(f^(b*x^n + a)*x^(3/2*n - 1), x)
```

3.191 $\int f^{a+bx^n}x^{-1+\frac{n}{2}}\,dx$

Optimal. Leaf size=43

$$\frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{\sqrt{b}n\sqrt{\log(f)}}$$

```
[Out] (f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqrt[Log[f]]])/(Sqrt[b]*n*Sqrt
[Log[f]])
```

Rubi [A] time = 0.0639646, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\sqrt{\pi}f^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{\sqrt{b}n\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 + n/2),x]
```

```
[Out] (f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqrt[Log[f]]])/(Sqrt[b]*n*Sqrt
[Log[f]])
```

Rubi in Sympy [A] time = 5.5116, size = 39, normalized size = 0.91

$$\frac{\sqrt{\pi}f^a\operatorname{erfi}\left(\sqrt{b}x^{\frac{n}{2}}\sqrt{\log(f)}\right)}{\sqrt{b}n\sqrt{\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1+1/2*n),x)
```

```
[Out] sqrt(pi)*f**a*erfi(sqrt(b)*x**(n/2)*sqrt(log(f)))/(sqrt(b)*n*sqrt
(log(f)))
```

Mathematica [A] time = 0.0332997, size = 46, normalized size = 1.07

$$\frac{\sqrt{\pi}f^a x^{n/2}\left(\text{Erf}\left(\sqrt{-b\log(f)x^n}\right)-1\right)}{n\sqrt{-b\log(f)x^n}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 + n/2),x]
```

```
[Out] (f^a*Sqrt[Pi]*x^(n/2)*(-1 + Erf[Sqrt[-(b*x^n*Log[f])]]))/(n*Sqrt[
-(b*x^n*Log[f])])
```

Maple [A] time = 0.068, size = 32, normalized size = 0.7

$$\frac{f^a\sqrt{\pi}}{n}Erf\left(\sqrt{-b\ln(f)}x^{\frac{n}{2}}\right)\frac{1}{\sqrt{-b\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1+1/2*n),x)
```

```
[Out] 1/n*f^a*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b*ln(f))^(1/2)*x^(1/2*n))
```

Maxima [A] time = 1.04757, size = 51, normalized size = 1.19

$$\frac{\sqrt{\pi} f^{a} x^{\frac{1}{2}n} \left(\operatorname{erf}\left(\sqrt{-bx^{n} \log(f)}\right) - 1\right)}{\sqrt{-bx^{n} \log(f)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(1/2*n - 1),x, algorithm="maxima")
```

```
[Out] sqrt(pi)*f^a*x^(1/2*n)*(erf(sqrt(-b*x^n*log(f))) - 1)/(sqrt(-b*x^
n*log(f))*n)
```

Fricas [A] time = 0.281294, size = 46, normalized size = 1.07

$$\frac{\sqrt{\pi} f^{a} \operatorname{erf}\left(\sqrt{-b \log(f)} x x^{\frac{1}{2}n-1}\right)}{\sqrt{-b \log(f)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(1/2*n - 1),x, algorithm="fricas")
```

```
[Out] sqrt(pi)*f^a*erf(sqrt(-b*log(f))*x*x^(1/2*n - 1))/(sqrt(-b*log(f)
)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1+1/2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^{n}+a} x^{\frac{1}{2}n-1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(1/2*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(1/2*n - 1), x)
```

3.192 $\int f^{a+bx^n}x^{-1-\frac{n}{2}}\,dx$

Optimal. Leaf size=66

$$\frac{2\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\text{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{n}-\frac{2x^{-n/2}f^{a+bx^n}}{n}$$

```
[Out] (-2*f^(a + b*x^n))/(n*x^(n/2)) + (2*Sqrt[b]*f^a*Sqrt[Pi]*Erfi[Sqr
t[b]*x^(n/2)*Sqrt[Log[f]]]*Sqrt[Log[f]])/n
```

Rubi [A] time = 0.108469, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{2\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\text{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{n}-\frac{2x^{-n/2}f^{a+bx^n}}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 - n/2),x]
```

```
[Out] (-2*f^(a + b*x^n))/(n*x^(n/2)) + (2*Sqrt[b]*f^a*Sqrt[Pi]*Erfi[Sqr
t[b]*x^(n/2)*Sqrt[Log[f]]]*Sqrt[Log[f]])/n
```

Rubi in Sympy [A] time = 9.39438, size = 58, normalized size = 0.88

$$\frac{2\sqrt{\pi}\sqrt{b}f^a\sqrt{\log(f)}\,\text{erfi}\left(\sqrt{b}x^{\frac{n}{2}}\sqrt{\log(f)}\right)}{n}-\frac{2f^{a+bx^n}x^{-\frac{n}{2}}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1-1/2*n),x)
```

```
[Out] 2*sqrt(pi)*sqrt(b)*f**a*sqrt(log(f))*erfi(sqrt(b)*x**(n/2)*sqrt(l
og(f)))/n - 2*f**(a + b*x**n)*x**(-n/2)/n
```

Mathematica [A] time = 0.117813, size = 59, normalized size = 0.89

$$\frac{2f^ax^{-n/2}\left(-\sqrt{\pi}\sqrt{-b\log(f)x^n}\left(\text{Erf}\left(\sqrt{-b\log(f)x^n}\right)-1\right)-f^{bx^n}\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 - n/2),x]
```

```
[Out] (2*f^a*(-f^(b*x^n) - Sqrt[Pi]*(-1 + Erf[Sqrt[-(b*x^n*Log[f])]])*S
qrt[-(b*x^n*Log[f])]))/(n*x^(n/2))
```

Maple [A] time = 0.063, size = 59, normalized size = 0.9

$$-2\,{\frac{f^af^{bx^n}}{nx^{n/2}}}+2\,{\frac{f^a\ln(f)\,b\sqrt{\pi}Erf\left(\sqrt{-b\ln(f)}x^{n/2}\right)}{n\sqrt{-b\ln(f)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*x^(-1-1/2*n),x)
```

```
[Out] -2/n*f^a*f^(b*x^n)/(x^(1/2*n))+2/n*f^a*ln(f)*b*Pi^(1/2)/(-b*ln(f)
)^(1/2)*erf((-b*ln(f))^(1/2)*x^(1/2*n))
```

Maxima [A] time = 1.07527, size = 47, normalized size = 0.71

$$-\frac{\sqrt{-bx^n\log(f)}f^a\Gamma\left(-\frac{1}{2},-bx^n\log(f)\right)}{nx^{\frac{1}{2}n}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-1/2*n - 1),x, algorithm="maxima")
```

```
[Out] -sqrt(-b*x^n*log(f))*f^a*gamma(-1/2, -b*x^n*log(f))/(n*x^(1/2*n))
```

Fricas [A] time = 0.252109, size = 127, normalized size = 1.92

$$\frac{2\left(\sqrt{\pi}bf^a\operatorname{erf}\left(\frac{\sqrt{-b\log(f)}}{xx^{-\frac{1}{2}n-1}}\right)\log(f)-\sqrt{-b\log(f)}xx^{-\frac{1}{2}n-1}e^{\left(\frac{ax^2x^{-n-2}\log(f)+b\log(f)}{x^2x^{-n-2}}\right)}\right)}{\sqrt{-b\log(f)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-1/2*n - 1),x, algorithm="fricas")
```

```
[Out] 2*(sqrt(pi)*b*f^a*erf(sqrt(-b*log(f))/(x*x^(-1/2*n - 1)))*log(f)
- sqrt(-b*log(f))*x*x^(-1/2*n - 1)*e^((a*x^2*x^(-n - 2)*log(f) +
b*log(f))/(x^2*x^(-n - 2))))/(sqrt(-b*log(f))*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*x**(-1-1/2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}x^{-\frac{1}{2}n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-1/2*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(-1/2*n - 1), x)
```

3.193 $\int f^{a+bx^n} x^{-1-\frac{3n}{2}} dx$

Optimal. Leaf size=96

$$\frac{4\sqrt{\pi}b^{3/2}f^a\log^{\frac{3}{2}}(f)\mathrm{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{3n}-\frac{2x^{-3n/2}f^{a+bx^n}}{3n}-\frac{4b\log(f)x^{-n/2}f^{a+bx^n}}{3n}$$

```
[Out] (-2*f^(a + b*x^n))/(3*n*x^((3*n)/2)) - (4*b*f^(a + b*x^n)*Log[f])
/(3*n*x^(n/2)) + (4*b^(3/2)*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqr
t[Log[f]]]*Log[f]^(3/2))/(3*n)
```

Rubi [A] time = 0.154036, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{4\sqrt{\pi}b^{3/2}f^a\log^{\frac{3}{2}}(f)\mathrm{Erfi}\left(\sqrt{b}\sqrt{\log(f)}x^{n/2}\right)}{3n}-\frac{2x^{-3n/2}f^{a+bx^n}}{3n}-\frac{4b\log(f)x^{-n/2}f^{a+bx^n}}{3n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*x^(-1 - (3*n)/2),x]
```

```
[Out] (-2*f^(a + b*x^n))/(3*n*x^((3*n)/2)) - (4*b*f^(a + b*x^n)*Log[f])
/(3*n*x^(n/2)) + (4*b^(3/2)*f^a*Sqrt[Pi]*Erfi[Sqrt[b]*x^(n/2)*Sqr
t[Log[f]]]*Log[f]^(3/2))/(3*n)
```

Rubi in Sympy [A] time = 14.227, size = 87, normalized size = 0.91

$$\frac{4\sqrt{\pi}b^{\frac{3}{2}}f^a\log(f)^{\frac{3}{2}}\operatorname{erfi}\left(\sqrt{b}x^{\frac{n}{2}}\sqrt{\log(f)}\right)}{3n}-\frac{4bf^{a+bx^n}x^{-\frac{n}{2}}\log(f)}{3n}-\frac{2f^{a+bx^n}x^{-\frac{3n}{2}}}{3n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*x**(-1-3/2*n),x)
```

```
[Out] 4*sqrt(pi)*b**(3/2)*f**a*log(f)**(3/2)*erfi(sqrt(b)*x**(n/2)*sqrt
(log(f)))/(3*n) - 4*b*f**(a + b*x**n)*x**(-n/2)*log(f)/(3*n) - 2*
f**(a + b*x**n)*x**(-3*n/2)/(3*n)
```

Mathematica [A] time = 0.229524, size = 71, normalized size = 0.74

$$\frac{2f^ax^{-3n/2}\left(2\sqrt{\pi}\left(-b\log(f)x^n\right)^{3/2}\left(\mathrm{Erf}\left(\sqrt{-b\log(f)x^n}\right)-1\right)-f^{bx^n}\left(2b\log(f)x^n+1\right)\right)}{3n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x^n)*x^(-1 - (3*n)/2),x]
```

```
[Out] (2*f^a*(2*Sqrt[Pi]*(-1 + Erf[Sqrt[-(b*x^n*Log[f])]])*(-(b*x^n*Log
[f]))^(3/2) - f^(b*x^n)*(1 + 2*b*x^n*Log[f])))/(3*n*x^((3*n)/2))
```

Maple [A] time = 0.053, size = 88, normalized size = 0.9

$$-\frac{2 f^a f^{b x^n}}{3 n}\left(x^{\frac{n}{2}}\right)^{-3}-\frac{4 f^a \ln(f) b f^{b x^n}}{3 n}\left(x^{\frac{n}{2}}\right)^{-1}+\frac{4 f^a (\ln(f))^2 b^2 \sqrt{\pi}}{3 n} Erf\left(\sqrt{-b \ln(f)} x^{\frac{n}{2}}\right)\frac{1}{\sqrt{-b \ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(a+b*x^n)*x^(-1-3/2*n),x)
```

```
[Out] -2/3*f^a/n*f^(b*x^n)/(x^(1/2*n))^3-4/3*f^a/n*ln(f)*b*f^(b*x^n)/(x
^(1/2*n))+4/3*f^a/n*ln(f)^2*b^2*Pi^(1/2)/(-b*ln(f))^(1/2)*erf((-b
*ln(f))^(1/2)*x^(1/2*n))
```

Maxima [A] time = 1.09223, size = 47, normalized size = 0.49

$$-\frac{(-b x^n \log(f))^{\frac{3}{2}} f^a \left(-\frac{3}{2}, -b x^n \log(f)\right)}{n x^{\frac{3}{2} n}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^n + a)*x^(-3/2*n - 1),x, algorithm="maxima")
```

```
[Out] -(-b*x^n*log(f))^(3/2)*f^a*gamma(-3/2, -b*x^n*log(f))/(n*x^(3/2*n
))
```

Fricas [A] time = 0.263614, size = 157, normalized size = 1.64

$$\frac{2\left(2 \sqrt{\pi} b^2 f^a \operatorname{erf}\left(\frac{\sqrt{-b \log(f)}}{x^{\frac{1}{3}} x^{-\frac{1}{2} n-\frac{1}{3}}}\right) \log(f)^2-\left(2 b x^{\frac{1}{3}} x^{-\frac{1}{2} n-\frac{1}{3}} \log(f)+x x^{-\frac{3}{2} n-1}\right)\sqrt{-b \log(f)} e^{\left(\frac{a x^{\frac{2}{3}} x^{-n-\frac{2}{3}} \log(f)+b \log(f)}{x^{\frac{2}{3}} x^{-n-\frac{2}{3}}}\right)}\right)}{3 \sqrt{-b \log(f)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(b*x^n + a)*x^(-3/2*n - 1),x, algorithm="fricas")
```

```
[Out] 2/3*(2*sqrt(pi)*b^2*f^a*erf(sqrt(-b*log(f))/(x^(1/3)*x^(-1/2*n -
1/3)))*log(f)^2 - (2*b*x^(1/3)*x^(-1/2*n - 1/3)*log(f) + x*x^(-3/
2*n - 1))*sqrt(-b*log(f))*e^((a*x^(2/3)*x^(-n - 2/3)*log(f) + b*l
og(f))/(x^(2/3)*x^(-n - 2/3))))/(sqrt(-b*log(f))*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(a+b*x**n)*x**(-1-3/2*n),x)
```

```
[Out] Timed out
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}x^{-\frac{3}{2}n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*x^(-3/2*n - 1),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*x^(-3/2*n - 1), x)
```

3.194 $\int e^{-0.1x} x\,dx$

Optimal. Leaf size=16

$$-10.e^{-0.1x}x-100.e^{-0.1x}$$

```
[Out] -100./E^(0.1*x) - (10.*x)/E^(0.1*x)
```

Rubi [A] time = 0.0146795, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$-10.e^{-0.1x}x-100.e^{-0.1x}$$

Warning: Unable to verify antiderivative.

```
[In] Int[x/E^(0.1*x),x]
```

```
[Out] -100./E^(0.1*x) - (10.*x)/E^(0.1*x)
```

Rubi in Sympy [A] time = 2.32485, size = 15, normalized size = 0.94

$$-10.0xe^{-0.1x}-100.0e^{-0.1x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(-.1*x)*x,x)
```

```
[Out] -10.0*x*exp(-0.1*x) - 100.0*exp(-0.1*x)
```

Mathematica [A] time = 0.00239891, size = 11, normalized size = 0.69

$$e^{-0.1x}(-10.x-100.)$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x/E^(0.1*x),x]
```

```
[Out] (-99.99999999999999 - 10.*x)/E^(0.1*x)
```

Maple [A] time = 0.016, size = 10, normalized size = 0.6

$$-10.0\ (x+10.0)\,e^{-0.1000000000\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(-.1*x)*x,x)
```

```
[Out] -10.*(x+10.)*exp(-.1000000000*x)
```

Maxima [A] time = 0.93581, size = 12, normalized size = 0.75

$$-10\,(x+10)e^{\left(-\frac{1}{10}\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(-0.100000000000000*x),x, algorithm="maxima")
```

```
[Out] -10*(x + 10)*e^(-1/10*x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(-0.100000000000000*x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0.141498, size = 10, normalized size = 0.62

$$1.0\,(-10.0x-100.0)\,e^{-0.1x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(-.1*x)*x,x)
```

```
[Out] 1.0*(-10.0*x - 100.0)*exp(-0.1*x)
```

GIAC/XCAS [A] time = 0.235451, size = 14, normalized size = 0.88

$$(-10.0\,x-100.0)e^{(-0.1\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(-0.100000000000000*x),x, algorithm="giac")
```

```
[Out] (-10.0*x - 100.0)*e^(-0.1*x)
```

3.195 $\int f^{c(a+bx)^2} x^3\,dx$

Optimal. Leaf size=203

$$-\frac{\sqrt{\pi}a^3\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^4\sqrt{c}\sqrt{\log(f)}}+\frac{3a^2f^{c(a+bx)^2}}{2b^4c\log(f)}+\frac{3\sqrt{\pi}a\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{4b^4c^{3/2}\log^{\frac{3}{2}}(f)}-\frac{f^{c(a+bx)^2}}{2b^4c^2\log^2(f)}+\frac{(a+bx)^2f^{c(a+bx)^2}}{2b^4c\log(f)}-\frac{3a(a+bx)f^{c(a+bx)^2}}{2b^4c\log(f)}$$

```
[Out] -f^(c*(a + b*x)^2)/(2*b^4*c^2*Log[f]^2) + (3*a*Sqrt[Pi]*Erfi[Sqrt
[c]*(a + b*x)*Sqrt[Log[f]]])/(4*b^4*c^(3/2)*Log[f]^(3/2)) + (3*a^
2*f^(c*(a + b*x)^2))/(2*b^4*c*Log[f]) - (3*a*f^(c*(a + b*x)^2)*(a
 + b*x))/(2*b^4*c*Log[f]) + (f^(c*(a + b*x)^2)*(a + b*x)^2)/(2*b^
4*c*Log[f]) - (a^3*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])
/(2*b^4*Sqrt[c]*Sqrt[Log[f]])
```

Rubi [A] time = 0.329628, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{\sqrt{\pi}a^3\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^4\sqrt{c}\sqrt{\log(f)}}+\frac{3a^2f^{c(a+bx)^2}}{2b^4c\log(f)}+\frac{3\sqrt{\pi}a\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{4b^4c^{3/2}\log^{\frac{3}{2}}(f)}-\frac{f^{c(a+bx)^2}}{2b^4c^2\log^2(f)}+\frac{(a+bx)^2f^{c(a+bx)^2}}{2b^4c\log(f)}-\frac{3a(a+bx)f^{c(a+bx)^2}}{2b^4c\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^2)*x^3,x]
```

```
[Out] -f^(c*(a + b*x)^2)/(2*b^4*c^2*Log[f]^2) + (3*a*Sqrt[Pi]*Erfi[Sqrt
[c]*(a + b*x)*Sqrt[Log[f]]])/(4*b^4*c^(3/2)*Log[f]^(3/2)) + (3*a^
2*f^(c*(a + b*x)^2))/(2*b^4*c*Log[f]) - (3*a*f^(c*(a + b*x)^2)*(a
 + b*x))/(2*b^4*c*Log[f]) + (f^(c*(a + b*x)^2)*(a + b*x)^2)/(2*b^
4*c*Log[f]) - (a^3*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])
/(2*b^4*Sqrt[c]*Sqrt[Log[f]])
```

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

$$-\frac{a^3\int f^{\frac{(2abc+2b^2cx)^2}{4b^2c}}\,dx}{b^3}+\frac{3a^2f^{c(a+bx)^2}}{2b^4c\log(f)}+\frac{3a\int f^{\frac{(2abc+2b^2cx)^2}{4b^2c}}\,dx}{2b^3c\log(f)}-\frac{3af^{c(a+bx)^2}(a+bx)}{2b^4c\log(f)}+\frac{f^{c(a+bx)^2}(a+bx)^2}{2b^4c\log(f)}-\frac{f^{c(a+bx)^2}}{2b^4c^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**2)*x**3,x)
```

```
[Out] -a**3*Integral(f**((2*a*b*c + 2*b**2*c*x)**2/(4*b**2*c)), x)/b**3
 + 3*a**2*f**(c*(a + b*x)**2)/(2*b**4*c*log(f)) + 3*a*Integral(f*
*((2*a*b*c + 2*b**2*c*x)**2/(4*b**2*c)), x)/(2*b**3*c*log(f)) - 3
*a*f**(c*(a + b*x)**2)*(a + b*x)/(2*b**4*c*log(f)) + f**(c*(a + b
*x)**2)*(a + b*x)**2/(2*b**4*c*log(f)) - f**(c*(a + b*x)**2)/(2*b
**4*c**2*log(f)**2)
```

Mathematica [A] time = 0.151553, size = 96, normalized size = 0.47

$$\frac{2f^{c(a+bx)^2}\left(c\log(f)\left(a^2-abx+b^2x^2\right)-1\right)+\sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\left(3-2a^2c\log(f)\right)\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{4b^4c^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]   Integrate[f^(c*(a + b*x)^2)*x^3,x]
```

```
[Out] (a*Sqrt[c]*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]]*Sqrt[Log
[f]]*(3 - 2*a^2*c*Log[f]) + 2*f^(c*(a + b*x)^2)*(-1 + c*(a^2 - a*
b*x + b^2*x^2)*Log[f]))/(4*b^4*c^2*Log[f]^2)
```

Maple [A] time = 0.084, size = 193, normalized size = 1.

$$\frac{f^{c(bx+a)^2}x^2}{2\,cb^2\ln(f)}-\frac{axf^{c(bx+a)^2}}{2\,cb^3\ln(f)}+\frac{a^2f^{c(bx+a)^2}}{2\,b^4c\ln(f)}$$
$$+\frac{a^3\sqrt{\pi}}{2\,b^4}Erf\left(-b\sqrt{-c\ln(f)}x+ac\ln(f)\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$
$$-\frac{3\,a\sqrt{\pi}}{4\,b^4c\ln(f)}Erf\left(-b\sqrt{-c\ln(f)}x+ac\ln(f)\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}-\frac{f^{c(bx+a)^2}}{2\,c^2b^4(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(c*(b*x+a)^2)*x^3,x)
```

```
[Out] 1/2/c/b^2/ln(f)*x^2*f^(c*(b*x+a)^2)-1/2*a/b^3/c/ln(f)*x*f^(c*(b*x
+a)^2)+1/2*a^2*f^(c*(b*x+a)^2)/b^4/c/ln(f)+1/2*a^3/b^4*Pi^(1/2)/(
-c*ln(f))^(1/2)*erf(-b*(-c*ln(f))^(1/2)*x+a*c*ln(f)/(-c*ln(f))^(1
/2))-3/4*a/b^4/c/ln(f)*Pi^(1/2)/(-c*ln(f))^(1/2)*erf(-b*(-c*ln(f)
)^(1/2)*x+a*c*ln(f)/(-c*ln(f))^(1/2))-1/2*f^(c*(b*x+a)^2)/b^4/c^2
/ln(f)^2
```

Maxima [A] time = 0.976154, size = 428, normalized size = 2.11

$$-\frac{\frac{\sqrt{\pi}\left(b^2cx\log(f)+abc\log(f)\right)a^3b^3c^3\left(\text{erf}\left(\sqrt{-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}}\right)-1\right)\log(f)^3}{\left(b^2c\log(f)\right)^{\frac{7}{2}}\sqrt{-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}}}-\frac{3a^2b^4c^3e^{\left(\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}\right)}\log(f)^3}{\left(b^2c\log(f)\right)^{\frac{7}{2}}}+\frac{b^4c^2\left(2,-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}\cdots\right.}{\left(b^2c\log(f)\right)^{\frac{7}{2}}}\cdots}{2\sqrt{b^2c\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^((b*x + a)^2*c)*x^3,x, algorithm="maxima")
```

```
[Out] -1/2*(sqrt(pi)*(b^2*c*x*log(f) + a*b*c*log(f))*a^3*b^3*c^3*(erf(s
qrt(-(b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c*log(f)))) - 1)*log(
f)^3/((b^2*c*log(f))^(7/2)*sqrt(-(b^2*c*x*log(f) + a*b*c*log(f))^
2/(b^2*c*log(f)))) - 3*a^2*b^4*c^3*e^((b^2*c*x*log(f) + a*b*c*log
(f))^2/(b^2*c*log(f)))*log(f)^3/(b^2*c*log(f))^(7/2) + b^4*c^2*ga
mma(2, -(b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c*log(f)))*log(f)^
2/(b^2*c*log(f))^(7/2) - 3*(b^2*c*x*log(f) + a*b*c*log(f))^3*a*b*
c*gamma(3/2, -(b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c*log(f)))*l
og(f)/((b^2*c*log(f))^(7/2)*(-(b^2*c*x*log(f) + a*b*c*log(f))^2/(
b^2*c*log(f)))^(3/2)))/sqrt(b^2*c*log(f))
```

Fricas [A] time = 0.263551, size = 173, normalized size = 0.85

$$\frac{2\sqrt{-b^2c\log(f)}\left(\left(b^2cx^2 - abcx + a^2c\right)\log(f) - 1\right)f^{b^2cx^2+2\,abcx+a^2c} - \sqrt{\pi}\left(2\,a^3bc^2\log(f)^2 - 3\,abc\log(f)\right)\text{erf}\left(\frac{\sqrt{-b^2c\log(f)}(b}{b}\right.}{4\sqrt{-b^2c\log(f)}b^4c^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^3,x, algorithm="fricas")
```

```
[Out] 1/4*(2*sqrt(-b^2*c*log(f))*((b^2*c*x^2 - a*b*c*x + a^2*c)*log(f)
- 1)*f^(b^2*c*x^2 + 2*a*b*c*x + a^2*c) - sqrt(pi)*(2*a^3*b*c^2*lo
g(f)^2 - 3*a*b*c*log(f))*erf(sqrt(-b^2*c*log(f))*(b*x + a)/b))/(s
qrt(-b^2*c*log(f))*b^4*c^2*log(f)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)*x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.262359, size = 184, normalized size = 0.91

$$\frac{\frac{\sqrt{\pi}\left(2\,a^3c\ln(f) - 3\,a\right)\text{erf}\left(-\sqrt{-c\ln(f)}b\left(x+\frac{a}{b}\right)\right)}{\sqrt{-c\ln(f)}bc\ln(f)} + \frac{2\left(b^2c\left(x+\frac{a}{b}\right)^2\ln(f) - 3\,abc\left(x+\frac{a}{b}\right)\ln(f) + 3\,a^2c\ln(f) - 1\right)e^{\left(b^2cx^2\ln(f)+2\,abcx\ln(f)+a^2c\ln(f)\right)}}{bc^2\ln(f)^2}}{4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^3,x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(pi)*(2*a^3*c*ln(f) - 3*a)*erf(-sqrt(-c*ln(f))*b*(x + a/
b))/(sqrt(-c*ln(f))*b*c*ln(f)) + 2*(b^2*c*(x + a/b)^2*ln(f) - 3*a
*b*c*(x + a/b)*ln(f) + 3*a^2*c*ln(f) - 1)*e^(b^2*c*x^2*ln(f) + 2*
a*b*c*x*ln(f) + a^2*c*ln(f))/(b*c^2*ln(f)^2))/b^3
```

3.196 $\int f^{c(a+bx)^2} x^2 \, dx$

Optimal. Leaf size=140

$$\frac{\sqrt{\pi}a^2\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^3\sqrt{c}\sqrt{\log(f)}}-\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{4b^3c^{3/2}\log^{\frac{3}{2}}(f)}+\frac{(a+bx)f^{c(a+bx)^2}}{2b^3c\log(f)}-\frac{af^{c(a+bx)^2}}{b^3c\log(f)}$$

```
[Out] -(Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])/(4*b^3*c^(3/2)*L
og[f]^(3/2)) - (a*f^(c*(a + b*x)^2))/(b^3*c*Log[f]) + (f^(c*(a +
b*x)^2)*(a + b*x))/(2*b^3*c*Log[f]) + (a^2*Sqrt[Pi]*Erfi[Sqrt[c]*
(a + b*x)*Sqrt[Log[f]]])/(2*b^3*Sqrt[c]*Sqrt[Log[f]])
```

Rubi [A] time = 0.207403, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$

$$\frac{\sqrt{\pi}a^2\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^3\sqrt{c}\sqrt{\log(f)}}-\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{4b^3c^{3/2}\log^{\frac{3}{2}}(f)}+\frac{(a+bx)f^{c(a+bx)^2}}{2b^3c\log(f)}-\frac{af^{c(a+bx)^2}}{b^3c\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^2)*x^2,x]
```

```
[Out] -(Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])/(4*b^3*c^(3/2)*L
og[f]^(3/2)) - (a*f^(c*(a + b*x)^2))/(b^3*c*Log[f]) + (f^(c*(a +
b*x)^2)*(a + b*x))/(2*b^3*c*Log[f]) + (a^2*Sqrt[Pi]*Erfi[Sqrt[c]*
(a + b*x)*Sqrt[Log[f]]])/(2*b^3*Sqrt[c]*Sqrt[Log[f]])
```

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

$$\frac{a^2\int f^{a^2c+2abcx+b^2cx^2}\,dx}{b^2}-\frac{af^{c(a+bx)^2}}{b^3c\log(f)}-\frac{\int f^{a^2c+2abcx+b^2cx^2}\,dx}{2b^2c\log(f)}+\frac{f^{c(a+bx)^2}(a+bx)}{2b^3c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**2)*x**2,x)
```

```
[Out] a**2*Integral(f**(a**2*c + 2*a*b*c*x + b**2*c*x**2), x)/b**2 - a*
f**(c*(a + b*x)**2)/(b**3*c*log(f)) - Integral(f**(a**2*c + 2*a*b
*c*x + b**2*c*x**2), x)/(2*b**2*c*log(f)) + f**(c*(a + b*x)**2)*(
a + b*x)/(2*b**3*c*log(f))
```

Mathematica [A] time = 0.0985372, size = 83, normalized size = 0.59

$$\frac{\sqrt{\pi}\left(2a^2c\log(f)-1\right)\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)-2\sqrt{c}\sqrt{\log(f)}(a-bx)f^{c(a+bx)^2}}{4b^3c^{3/2}\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c*(a + b*x)^2)*x^2,x]
```

```
[Out] (-2*Sqrt[c]*f^(c*(a + b*x)^2)*(a - b*x)*Sqrt[Log[f]] + Sqrt[Pi]*E
rfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]]*(-1 + 2*a^2*c*Log[f]))/(4*b^3
```

```
*c^(3/2)*Log[f]^(3/2))
```

Maple [A] time = 0.037, size = 140, normalized size = 1.

$$\frac{f^{c(bx+a)^2}x}{2\,cb^2\ln(f)}-\frac{af^{c(bx+a)^2}}{2\,cb^3\ln(f)}-\frac{a^2\sqrt{\pi}}{2\,b^3}Erf\left(-b\sqrt{-c\ln(f)}x+ac\ln(f)\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}+\frac{\sqrt{\pi}}{4\,cb^3\ln(f)}Erf\left(-b\sqrt{-c\ln(f)}x+ac\ln(f)\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2)*x^2,x)
```

```
[Out] 1/2/c/b^2/ln(f)*x*f^(c*(b*x+a)^2)-1/2*a*f^(c*(b*x+a)^2)/b^3/c/ln(
f)-1/2*a^2/b^3*Pi^(1/2)/(-c*ln(f))^(1/2)*erf(-b*(-c*ln(f))^(1/2)*
x+a*c*ln(f)/(-c*ln(f))^(1/2))+1/4/c/b^3/ln(f)*Pi^(1/2)/(-c*ln(f))
^(1/2)*erf(-b*(-c*ln(f))^(1/2)*x+a*c*ln(f)/(-c*ln(f))^(1/2))
```

Maxima [A] time = 1.02154, size = 350, normalized size = 2.5

$$\frac{\frac{\sqrt{\pi}\left(b^2cx\log(f)+abc\log(f)\right)a^2b^2c^2\left(\operatorname{erf}\left(\sqrt{-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}}\right)-1\right)\log(f)^2}{\left(b^2c\log(f)\right)^{\frac{5}{2}}\sqrt{-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}}}-\frac{2\,ab^3c^2e^{\left(\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}\right)}\log(f)^2}{\left(b^2c\log(f)\right)^{\frac{5}{2}}}-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^3\left(\frac{3}{2},\ldots\right.}{\left(b^2c\log(f)\right)^{\frac{5}{2}}\left(-\frac{\left(b^2cx\ldots\right.}{}\right.}}{2\sqrt{b^2c\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^2,x, algorithm="maxima")
```

```
[Out] 1/2*(sqrt(pi)*(b^2*c*x*log(f) + a*b*c*log(f))*a^2*b^2*c^2*(erf(sq
rt(-(b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c*log(f)))) - 1)*log(f
)^2/((b^2*c*log(f))^(5/2)*sqrt(-(b^2*c*x*log(f) + a*b*c*log(f))^2
/(b^2*c*log(f)))) - 2*a*b^3*c^2*e^((b^2*c*x*log(f) + a*b*c*log(f)
)^2/(b^2*c*log(f)))*log(f)^2/(b^2*c*log(f))^(5/2) - (b^2*c*x*log(
f) + a*b*c*log(f))^3*gamma(3/2, -(b^2*c*x*log(f) + a*b*c*log(f))^
2/(b^2*c*log(f)))/((b^2*c*log(f))^(5/2)*(-(b^2*c*x*log(f) + a*b*c
*log(f))^2/(b^2*c*log(f)))^(3/2)))/sqrt(b^2*c*log(f))
```

Fricas [A] time = 0.26551, size = 136, normalized size = 0.97

$$\frac{2\sqrt{-b^2c\log(f)}(bx-a)f^{b^2cx^2+2\,abcx+a^2c}+\sqrt{\pi}\left(2\,a^2bc\log(f)-b\right)\operatorname{erf}\left(\frac{\sqrt{-b^2c\log(f)}(bx+a)}{b}\right)}{4\sqrt{-b^2c\log(f)}b^3c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*sqrt(-b^2*c*log(f))*(b*x - a)*f^(b^2*c*x^2 + 2*a*b*c*x + a
^2*c) + sqrt(pi)*(2*a^2*b*c*log(f) - b)*erf(sqrt(-b^2*c*log(f))*(
b*x + a)/b))/(sqrt(-b^2*c*log(f))*b^3*c*log(f))
```

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

$$\int f^{c(a+bx)^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)*x**2,x)
```

```
[Out] Integral(f**(c*(a + b*x)**2)*x**2, x)
```

GIAC/XCAS [A] time = 0.238722, size = 144, normalized size = 1.03

$$-\frac{\frac{\sqrt{\pi}\left(2\,a^2c\ln(f)-1\right)\,\mathrm{erf}\left(-\sqrt{-c\ln(f)}b\left(x+\frac{a}{b}\right)\right)}{\sqrt{-c\ln(f)}bc\ln(f)}-\frac{2\left(b\left(x+\frac{a}{b}\right)-2\,a\right)e^{\left(b^2cx^2\ln(f)+2\,abcx\ln(f)+a^2c\ln(f)\right)}}{bc\ln(f)}}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^2,x, algorithm="giac")
```

```
[Out] -1/4*(sqrt(pi)*(2*a^2*c*ln(f) - 1)*erf(-sqrt(-c*ln(f))*b*(x + a/b
))/(sqrt(-c*ln(f))*b*c*ln(f)) - 2*(b*(x + a/b) - 2*a)*e^(b^2*c*x^
2*ln(f) + 2*a*b*c*x*ln(f) + a^2*c*ln(f))/(b*c*ln(f)))/b^2
```

3.197 $\int f^{c(a+bx)^2} x \, dx$

Optimal. Leaf size=68

$$\frac{f^{c(a+bx)^2}}{2b^2c\log(f)} - \frac{\sqrt{\pi}a\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^2\sqrt{c}\sqrt{\log(f)}}$$

```
[Out] f^(c*(a + b*x)^2)/(2*b^2*c*Log[f]) - (a*Sqrt[Pi]*Erfi[Sqrt[c]*(a
+ b*x)*Sqrt[Log[f]]])/(2*b^2*Sqrt[c]*Sqrt[Log[f]])
```

Rubi [A] time = 0.0922748, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$

$$\frac{f^{c(a+bx)^2}}{2b^2c\log(f)} - \frac{\sqrt{\pi}a\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^2\sqrt{c}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In] Int[f^(c*(a + b*x)^2)*x,x]
```

```
[Out] f^(c*(a + b*x)^2)/(2*b^2*c*Log[f]) - (a*Sqrt[Pi]*Erfi[Sqrt[c]*(a
+ b*x)*Sqrt[Log[f]]])/(2*b^2*Sqrt[c]*Sqrt[Log[f]])
```

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

$$-\frac{a\int f^{\frac{(2abc+2b^2cx)^2}{4b^2c}}\,dx}{b} + \frac{f^{c(a+bx)^2}}{2b^2c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*(b*x+a)**2)*x,x)
```

```
[Out] -a*Integral(f**((2*a*b*c + 2*b**2*c*x)**2/(4*b**2*c)), x)/b + f**
(c*(a + b*x)**2)/(2*b**2*c*log(f))
```

Mathematica [A] time = 0.0355843, size = 63, normalized size = 0.93

$$\frac{f^{c(a+bx)^2} - \sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b^2c\log(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(c*(a + b*x)^2)*x,x]
```

```
[Out] (f^(c*(a + b*x)^2) - a*Sqrt[c]*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sq
rt[Log[f]]]*Sqrt[Log[f]])/(2*b^2*c*Log[f])
```

Maple [A] time = 0.031, size = 66, normalized size = 1.

$$\frac{f^{c(bx+a)^2}}{2\,cb^2\ln(f)} + \frac{a\sqrt{\pi}}{2\,b^2}Erf\left(-b\sqrt{-c\ln(f)}x + ac\ln(f)\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2)*x,x)
```

```
[Out] 1/2*f^(c*(b*x+a)^2)/b^2/c/ln(f)+1/2*a/b^2*Pi^(1/2)/(-c*ln(f))^(1/
2)*erf(-b*(-c*ln(f))^(1/2)*x+a*c*ln(f)/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.857717, size = 211, normalized size = 3.1

$$-\frac{\frac{\sqrt{\pi}\left(b^2cx\log(f)+abc\log(f)\right)abc\left(\operatorname{erf}\left(\sqrt{-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}}\right)-1\right)\log(f)}{\left(b^2c\log(f)\right)^{\frac{3}{2}}\sqrt{-\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}}}-\frac{b^2ce^{\left(\frac{\left(b^2cx\log(f)+abc\log(f)\right)^2}{b^2c\log(f)}\right)}\log(f)}{\left(b^2c\log(f)\right)^{\frac{3}{2}}}}{2\sqrt{b^2c\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x,x, algorithm="maxima")
```

```
[Out] -1/2*(sqrt(pi)*(b^2*c*x*log(f) + a*b*c*log(f))*a*b*c*(erf(sqrt(-(
b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c*log(f)))) - 1)*log(f)/((b
^2*c*log(f))^(3/2)*sqrt(-(b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c
*log(f)))) - b^2*c*e^((b^2*c*x*log(f) + a*b*c*log(f))^2/(b^2*c*lo
g(f)))*log(f)/(b^2*c*log(f))^(3/2))/sqrt(b^2*c*log(f))
```

Fricas [A] time = 0.259283, size = 116, normalized size = 1.71

$$-\frac{\sqrt{\pi}abc\operatorname{erf}\left(\frac{\sqrt{-b^2c\log(f)}(bx+a)}{b}\right)\log(f)-\sqrt{-b^2c\log(f)}f^{b^2cx^2+2abcx+a^2c}}{2\sqrt{-b^2c\log(f)}b^2c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(pi)*a*b*c*erf(sqrt(-b^2*c*log(f))*(b*x + a)/b)*log(f)
- sqrt(-b^2*c*log(f))*f^(b^2*c*x^2 + 2*a*b*c*x + a^2*c))/(sqrt(-b
^2*c*log(f))*b^2*c*log(f))
```

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

$$\int f^{c(a+bx)^2}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)*x,x)
```

```
[Out] Integral(f**(c*(a + b*x)**2)*x, x)
```

GIAC/XCAS [A] time = 0.254261, size = 104, normalized size = 1.53

$$\frac{\frac{\sqrt{\pi}a\operatorname{erf}\left(-\sqrt{-c\ln(f)}b\left(x+\frac{a}{b}\right)\right)}{\sqrt{-c\ln(f)}b}+\frac{e^{\left(b^2cx^2\ln(f)+2\,abcx\ln(f)+a^2c\ln(f)\right)}}{bc\ln(f)}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x,x, algorithm="giac")
```

```
[Out] 1/2*(sqrt(pi)*a*erf(-sqrt(-c*ln(f))*b*(x + a/b))/(sqrt(-c*ln(f))*
b) + e^(b^2*c*x^2*ln(f) + 2*a*b*c*x*ln(f) + a^2*c*ln(f))/(b*c*ln(
f)))/b
```

3.198 $\int f^{c(a+bx)^2}\,dx$

Optimal. Leaf size=41

$$\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b\sqrt{c}\sqrt{\log(f)}}$$

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])/(2*b*Sqrt[c]*Sqrt
[Log[f]])
```

Rubi [A] time = 0.0213947, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b\sqrt{c}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^2),x]
```

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])/(2*b*Sqrt[c]*Sqrt
[Log[f]])
```

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

$$\int f^{a^2c+2abcx+b^2cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**2),x)
```

```
[Out] Integral(f**(a**2*c + 2*a*b*c*x + b**2*c*x**2), x)
```

Mathematica [A] time = 0.00597152, size = 41, normalized size = 1.

$$\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)}{2b\sqrt{c}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c*(a + b*x)^2),x]
```

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]])/(2*b*Sqrt[c]*Sqrt
[Log[f]])
```

Maple [A] time = 0.028, size = 41, normalized size = 1.

$$-\frac{\sqrt{\pi}}{2\,b}Erf\left(-b\sqrt{-c\ln(f)}x+ac\ln(f)\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2),x)
```

```
[Out] -1/2*Pi^(1/2)/b/(-c*ln(f))^(1/2)*erf(-b*(-c*ln(f))^(1/2)*x+a*c*ln
(f)/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.833927, size = 54, normalized size = 1.32

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(\sqrt{-c\log\left(f\right)}bx - \frac{ac\log(f)}{\sqrt{-c\log(f)}}\right)}{2\sqrt{-c\log\left(f\right)}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*erf(sqrt(-c*log(f))*b*x - a*c*log(f)/sqrt(-c*log(f))
)/(sqrt(-c*log(f))*b)
```

Fricas [A] time = 0.271681, size = 47, normalized size = 1.15

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(\frac{\sqrt{-b^2c\log(f)}(bx+a)}{b}\right)}{2\sqrt{-b^2c\log\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*erf(sqrt(-b^2*c*log(f))*(b*x + a)/b)/sqrt(-b^2*c*log
(f))
```

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

$$\int f^{c(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2),x)
```

```
[Out] Integral(f**(c*(a + b*x)**2), x)
```

GIAC/XCAS [A] time = 0.253157, size = 45, normalized size = 1.1

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-c\ln\left(f\right)}b\left(x + \frac{a}{b}\right)\right)}{2\sqrt{-c\ln\left(f\right)}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c),x, algorithm="giac")

[Out] -1/2*sqrt(pi)*erf(-sqrt(-c*ln(f))*b*(x + a/b))/(sqrt(-c*ln(f))*b)
```

3.199 $\int \frac{f^{c(a+bx)^2}}{x} dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{c(a+bx)^2}}{x},x\right)$$

```
[Out] Unintegrable[f^(c*(a + b*x)^2)/x, x]
```

Rubi [A] time = 0.027268, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{c(a+bx)^2}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^2)/x,x]

[Out] Defer[Int][f^(c*(a + b*x)^2)/x, x]
```

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

$$\int \frac{f^{c(a+bx)^2}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**2)/x,x)

[Out] Integral(f**(c*(a + b*x)**2)/x, x)
```

Mathematica [A] time = 0.151976, size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^2}}{x} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^2)/x,x]

[Out] Integrate[f^(c*(a + b*x)^2)/x, x]
```

Maple [A] time = 0.042, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^2}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2)/x,x)

[Out] int(f^(c*(b*x+a)^2)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^2c}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^((b*x + a)^2*c)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{b^2cx^2+2\,abcx+a^2c}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(b^2*c*x^2 + 2*a*b*c*x + a^2*c)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)/x,x)

[Out] Integral(f**(c*(a + b*x)**2)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^2c}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^((b*x + a)^2*c)/x, x)
```

3.200 $\int \frac{f^{c(a+bx)^2}}{x^2} dx$

Optimal. Leaf size=78

$$2abc\log(f)\text{Int}\left(\frac{f^{c(a+bx)^2}}{x},x\right)+\sqrt{\pi}b\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)-\frac{f^{c(a+bx)^2}}{x}$$

```
[Out] -(f^(c*(a + b*x)^2)/x) + b*Sqrt[c]*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x
)*Sqrt[Log[f]]]*Sqrt[Log[f]] + 2*a*b*c*Log[f]*Unintegrable[f^(c*(
a + b*x)^2)/x, x]
```

Rubi [A] time = 0.0838, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{f^{c(a+bx)^2}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c*(a + b*x)^2)/x^2,x]
```

```
[Out] -(f^(c*(a + b*x)^2)/x) + b*Sqrt[c]*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x
)*Sqrt[Log[f]]]*Sqrt[Log[f]] + 2*a*b*c*Log[f]*Defer[Int][f^(c*(a
+ b*x)^2)/x, x]
```

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

$$2abc\log(f)\int\frac{f^{c(a+bx)^2}}{x}\,dx+2b^2c\log(f)\int f^{c(a+bx)^2}\,dx-\frac{f^{c(a+bx)^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*(b*x+a)**2)/x**2,x)
```

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

Mathematica [A] time = 0.359671, size = 0, normalized size = 0.

$$\int\frac{f^{c(a+bx)^2}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c*(a + b*x)^2)/x^2,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^2)/x^2, x]
```

Maple [A] time = 0.025, size = 0, normalized size = 0.

$$\int\frac{f^{c(bx+a)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2)/x^2,x)

[Out] int(f^(c*(b*x+a)^2)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^2c}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^((b*x + a)^2*c)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{b^2cx^2+2\,abcx+a^2c}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(b^2*c*x^2 + 2*a*b*c*x + a^2*c)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)/x**2,x)

[Out] Integral(f**(c*(a + b*x)**2)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^2c}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^((b*x + a)^2*c)/x^2, x)
```

3.201 $\int \frac{f^{c(a+bx)^2}}{x^3} \, dx$

Optimal. Leaf size=137

$$2a^2b^2c^2\log^2(f)\text{Int}\left(\frac{f^{c(a+bx)^2}}{x},x\right)+b^2c\log(f)\text{Int}\left(\frac{f^{c(a+bx)^2}}{x},x\right)+\sqrt{\pi}ab^2c^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\sqrt{c}\sqrt{\log(f)}(a+bx)\right)-\frac{f^{c(a+bx)^2}}{2x^2}-\frac{abc\log(f)f^{c(a+bx)^2}}{x}$$

```
[Out] -f^(c*(a + b*x)^2)/(2*x^2) - (a*b*c*f^(c*(a + b*x)^2)*Log[f])/x +
 a*b^2*c^(3/2)*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]]*Log[
f]^(3/2) + b^2*c*Log[f]*Unintegrable[f^(c*(a + b*x)^2)/x, x] + 2*
a^2*b^2*c^2*Log[f]^2*Unintegrable[f^(c*(a + b*x)^2)/x, x]
```

Rubi [A] time = 0.157655, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{c(a+bx)^2}}{x^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^2)/x^3,x]
```

```
[Out] -f^(c*(a + b*x)^2)/(2*x^2) - (a*b*c*f^(c*(a + b*x)^2)*Log[f])/x +
 a*b^2*c^(3/2)*Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)*Sqrt[Log[f]]]*Log[
f]^(3/2) + b^2*c*Log[f]*Defer[Int][f^(c*(a + b*x)^2)/x, x] + 2*a^
2*b^2*c^2*Log[f]^2*Defer[Int][f^(c*(a + b*x)^2)/x, x]
```

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

$$2a^2b^2c^2\log(f)^2\int\frac{f^{c(a+bx)^2}}{x}\,dx+2ab^3c^2\log(f)^2\int f^{c(a+bx)^2}\,dx-\frac{abcf^{c(a+bx)^2}\log(f)}{x}+b^2c\log(f)\int\frac{f^{c(a+bx)^2}}{x}\,dx-\frac{f^{c(a+bx)^2}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**2)/x**3,x)
```

```
[Out] 2*a**2*b**2*c**2*log(f)**2*Integral(f**(c*(a + b*x)**2)/x, x) + 2
*a*b**3*c**2*log(f)**2*Integral(f**(c*(a + b*x)**2), x) - a*b*c*f
**(c*(a + b*x)**2)*log(f)/x + b**2*c*log(f)*Integral(f**(c*(a + b
*x)**2)/x, x) - f**(c*(a + b*x)**2)/(2*x**2)
```

Mathematica [A] time = 0.504432, size = 0, normalized size = 0.

$$\int\frac{f^{c(a+bx)^2}}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^2)/x^3,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^2)/x^3, x]
```

Maple [A] time = 0.032, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2)/x^3,x)
```

```
[Out] int(f^(c*(b*x+a)^2)/x^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^2 c}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^((b*x + a)^2*c)/x^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{b^2cx^2+2\,abcx+a^2c}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(f^(b^2*c*x^2 + 2*a*b*c*x + a^2*c)/x^3, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)/x**3,x)
```

```
[Out] Integral(f**(c*(a + b*x)**2)/x**3, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^2 c}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^((b*x + a)^2*c)/x^3, x)
```

3.202 $\int f^{c(a+bx)^3} x^2\, dx$

Optimal. Leaf size=120

$$-\frac{a^2(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b^3\sqrt[3]{-c\log(f)(a+bx)^3}}+\frac{2a(a+bx)^2\text{Gamma}\left(\frac{2}{3},-c\log(f)(a+bx)^3\right)}{3b^3\left(-c\log(f)(a+bx)^3\right)^{2/3}}+\frac{f^{c(a+bx)^3}}{3b^3c\log(f)}$$

```
[Out] f^(c*(a + b*x)^3)/(3*b^3*c*Log[f]) + (2*a*(a + b*x)^2*Gamma[2/3,
-(c*(a + b*x)^3*Log[f])])/(3*b^3*(-(c*(a + b*x)^3*Log[f]))^(2/3))
 - (a^2*(a + b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])])/(3*b^3*(-(
c*(a + b*x)^3*Log[f]))^(1/3))
```

Rubi [A] time = 0.156338, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$

$$-\frac{a^2(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b^3\sqrt[3]{-c\log(f)(a+bx)^3}}+\frac{2a(a+bx)^2\text{Gamma}\left(\frac{2}{3},-c\log(f)(a+bx)^3\right)}{3b^3\left(-c\log(f)(a+bx)^3\right)^{2/3}}+\frac{f^{c(a+bx)^3}}{3b^3c\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^3)*x^2,x]
```

```
[Out] f^(c*(a + b*x)^3)/(3*b^3*c*Log[f]) + (2*a*(a + b*x)^2*Gamma[2/3,
-(c*(a + b*x)^3*Log[f])])/(3*b^3*(-(c*(a + b*x)^3*Log[f]))^(2/3))
 - (a^2*(a + b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])])/(3*b^3*(-(
c*(a + b*x)^3*Log[f]))^(1/3))
```

Rubi in Sympy [A] time = 17.6015, size = 116, normalized size = 0.97

$$-\frac{a^2\,(a+bx)\left(\frac{1}{3},-c\,(a+bx)^3\log{(f)}\right)}{3b^3\sqrt[3]{-c\,(a+bx)^3\log{(f)}}}+\frac{2a\,(a+bx)^2\left(\frac{2}{3},-c\,(a+bx)^3\log{(f)}\right)}{3b^3\left(-c\,(a+bx)^3\log{(f)}\right)^{\frac{2}{3}}}+\frac{f^{c(a+bx)^3}}{3b^3c\log{(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**3)*x**2,x)
```

```
[Out] -a**2*(a + b*x)*Gamma(1/3, -c*(a + b*x)**3*log(f))/(3*b**3*(-c*(a
 + b*x)**3*log(f))**(1/3)) + 2*a*(a + b*x)**2*Gamma(2/3, -c*(a +
b*x)**3*log(f))/(3*b**3*(-c*(a + b*x)**3*log(f))**(2/3)) + f**(c*
(a + b*x)**3)/(3*b**3*c*log(f))
```

Mathematica [A] time = 0.252109, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^3} x^2\, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^3)*x^2,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^3)*x^2, x]
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^3} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3)*x^2,x)
```

```
[Out] int(f^(c*(b*x+a)^3)*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3 c} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x^2,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^3*c)*x^2, x)
```

Fricas [A] time = 0.277206, size = 232, normalized size = 1.93

$$-\frac{\left(-b^3 c \log(f)\right)^{\frac{1}{3}} a^2 b c \left(\frac{1}{3}, -\left(b^3 c x^3 + 3 a b^2 c x^2 + 3 a^2 b c x + a^3 c\right) \log(f)\right) \log(f) - 2 a b^2 c \left(\frac{2}{3}, -\left(b^3 c x^3 + 3 a b^2 c x^2 + 3 a^2 b c x + \right.\right.}{3 \left(-b^3 c \log(f)\right)^{\frac{2}{3}} b^3 c \log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x^2,x, algorithm="fricas")
```

```
[Out] -1/3*((-b^3*c*log(f))^(1/3)*a^2*b*c*gamma(1/3, -(b^3*c*x^3 + 3*a*
b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)*log(f))*log(f) - 2*a*b^2*c*gamma
(2/3, -(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)*log(f))*
log(f) - (-b^3*c*log(f))^(2/3)*f^(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a
^2*b*c*x + a^3*c))/((-b^3*c*log(f))^(2/3)*b^3*c*log(f))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3)*x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3 c} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x^2,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^3*c)*x^2, x)
```

3.203 $\int f^{c(a+bx)^3} x \, dx$

Optimal. Leaf size=92

$$\frac{a(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b^2\sqrt[3]{-c\log(f)(a+bx)^3}}-\frac{(a+bx)^2\text{Gamma}\left(\frac{2}{3},-c\log(f)(a+bx)^3\right)}{3b^2\left(-c\log(f)(a+bx)^3\right)^{2/3}}$$

```
[Out] -((a + b*x)^2*Gamma[2/3, -(c*(a + b*x)^3*Log[f])])/(3*b^2*(-(c*(a
 + b*x)^3*Log[f]))^(2/3)) + (a*(a + b*x)*Gamma[1/3, -(c*(a + b*x)
^3*Log[f])])/(3*b^2*(-(c*(a + b*x)^3*Log[f]))^(1/3))
```

Rubi [A] time = 0.0930898, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{a(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b^2\sqrt[3]{-c\log(f)(a+bx)^3}}-\frac{(a+bx)^2\text{Gamma}\left(\frac{2}{3},-c\log(f)(a+bx)^3\right)}{3b^2\left(-c\log(f)(a+bx)^3\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^3)*x,x]
```

```
[Out] -((a + b*x)^2*Gamma[2/3, -(c*(a + b*x)^3*Log[f])])/(3*b^2*(-(c*(a
 + b*x)^3*Log[f]))^(2/3)) + (a*(a + b*x)*Gamma[1/3, -(c*(a + b*x)
^3*Log[f])])/(3*b^2*(-(c*(a + b*x)^3*Log[f]))^(1/3))
```

Rubi in Sympy [A] time = 8.62724, size = 90, normalized size = 0.98

$$\frac{a\left(a+bx\right)\left(\frac{1}{3},-c\left(a+bx\right)^{3}\log\left(f\right)\right)}{3b^{2}\sqrt[3]{-c\left(a+bx\right)^{3}\log\left(f\right)}}-\frac{\left(a+bx\right)^{2}\left(\frac{2}{3},-c\left(a+bx\right)^{3}\log\left(f\right)\right)}{3b^{2}\left(-c\left(a+bx\right)^{3}\log\left(f\right)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**3)*x,x)
```

```
[Out] a*(a + b*x)*Gamma(1/3, -c*(a + b*x)**3*log(f))/(3*b**2*(-c*(a + b
*x)**3*log(f))**(1/3)) - (a + b*x)**2*Gamma(2/3, -c*(a + b*x)**3*
log(f))/(3*b**2*(-c*(a + b*x)**3*log(f))**(2/3))
```

Mathematica [A] time = 0.555301, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^3} x \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^3)*x,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^3)*x, x]
```

Maple [F] time = 0.02, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^3} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3)*x,x)
```

```
[Out] int(f^(c*(b*x+a)^3)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3c}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^3*c)*x, x)
```

Fricas [A] time = 0.2687, size = 144, normalized size = 1.57

$$\frac{\left(-b^3c\log\left(f\right)\right)^{\frac{1}{3}}a\,\Gamma\left(\frac{1}{3},-\left(b^3cx^3+3\,ab^2cx^2+3\,a^2bcx+a^3c\right)\log\left(f\right)\right)-b\,\Gamma\left(\frac{2}{3},-\left(b^3cx^3+3\,ab^2cx^2+3\,a^2bcx+a^3c\right)\log\left(f\right)\right)}{3\,\left(-b^3c\log\left(f\right)\right)^{\frac{2}{3}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x,x, algorithm="fricas")
```

```
[Out] 1/3*((-b^3*c*log(f))^(1/3)*a*gamma(1/3, -(b^3*c*x^3 + 3*a*b^2*c*x
^2 + 3*a^2*b*c*x + a^3*c)*log(f)) - b*gamma(2/3, -(b^3*c*x^3 + 3*
a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)*log(f)))/((-b^3*c*log(f))^(2/3
)*b)
```

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

$$\int f^{c(a+bx)^3}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3)*x,x)
```

```
[Out] Integral(f**(c*(a + b*x)**3)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3c}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^3*c)*x, x)
```

3.204 $\int f^{c(a+bx)^3}\,dx$

Optimal. Leaf size=44

$$-\frac{(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b\sqrt[3]{-c\log(f)(a+bx)^3}}$$

```
[Out] -((a + b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])])/(3*b*(-(c*(a + b
*x)^3*Log[f]))^(1/3))
```

Rubi [A] time = 0.0156862, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b\sqrt[3]{-c\log(f)(a+bx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^3),x]
```

```
[Out] -((a + b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])])/(3*b*(-(c*(a + b
*x)^3*Log[f]))^(1/3))
```

Rubi in Sympy [A] time = 1.70116, size = 42, normalized size = 0.95

$$-\frac{(a+bx)\left(\frac{1}{3},-c\,(a+bx)^3\log\left(f\right)\right)}{3b\sqrt[3]{-c\,(a+bx)^3\log\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**3),x)
```

```
[Out] -(a + b*x)*Gamma(1/3, -c*(a + b*x)**3*log(f))/(3*b*(-c*(a + b*x)*
*3*log(f))**(1/3))
```

Mathematica [A] time = 0.00283473, size = 44, normalized size = 1.

$$-\frac{(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{3b\sqrt[3]{-c\log(f)(a+bx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c*(a + b*x)^3),x]
```

```
[Out] -((a + b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])])/(3*b*(-(c*(a + b
*x)^3*Log[f]))^(1/3))
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3),x)
```

```
[Out] int(f^(c*(b*x+a)^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c),x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^3*c), x)
```

Fricas [A] time = 0.260135, size = 68, normalized size = 1.55

$$-\frac{\left(\frac{1}{3}, -\left(b^3cx^3 + 3\,ab^2cx^2 + 3\,a^2bcx + a^3c\right)\,\log\left(f\right)\right)}{3\,\left(-b^3c\log\left(f\right)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c),x, algorithm="fricas")
```

```
[Out] -1/3*gamma(1/3, -(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c
)*log(f))/(-b^3*c*log(f))^(1/3)
```

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

$$\int f^{c(a+bx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3),x)
```

```
[Out] Integral(f**(c*(a + b*x)**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c),x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^3*c), x)
```

3.205 $\int \frac{f^{c(a+bx)^3}}{x}\,dx$

Optimal. Leaf size=18

$$\operatorname{Int}\left(\frac{f^{c(a+bx)^3}}{x},x\right)$$

```
[Out] Unintegrable[f^(c*(a + b*x)^3)/x, x]
```

Rubi [A] time = 0.02642, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\operatorname{Int}\left(\frac{f^{c(a+bx)^3}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^3)/x,x]

[Out] Defer[Int][f^(c*(a + b*x)^3)/x, x]
```

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

$$\int \frac{f^{c(a+bx)^3}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**3)/x,x)

[Out] Integral(f**(c*(a + b*x)**3)/x, x)
```

Mathematica [A] time = 0.432726, size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^3}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^3)/x,x]

[Out] Integrate[f^(c*(a + b*x)^3)/x, x]
```

Maple [A] time = 0.017, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^3}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3)/x,x)
```

```
[Out] int(f^(c*(b*x+a)^3)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^3c}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)/x,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^3*c)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{b^3cx^3+3\,ab^2cx^2+3\,a^2bcx+a^3c}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)/x,x, algorithm="fricas")
```

```
[Out] integral(f^(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)/x, x
)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^3}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3)/x,x)
```

```
[Out] Integral(f**(c*(a + b*x)**3)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^3c}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)/x,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^3*c)/x, x)
```

3.206 $\int \frac{f^{c(a+bx)^3}}{x^2}\,dx$

Optimal. Leaf size=133

$$3a^2bc\log(f)\mathrm{Int}\left(\frac{f^{c(a+bx)^3}}{x},x\right)-\frac{abc\log(f)(a+bx)\mathrm{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{\sqrt[3]{-c\log(f)(a+bx)^3}}-\frac{bc\log(f)(a+bx)^2\mathrm{Gamma}\left(\frac{2}{3},-c\log(f)(a+bx)^3\right)}{\left(-c\log(f)(a+bx)^3\right)^{2/3}}-\frac{f^{c(a+bx)^3}}{x}$$

```
[Out] -(f^(c*(a + b*x)^3)/x) - (b*c*(a + b*x)^2*Gamma[2/3, -(c*(a + b*x
)^3*Log[f])]*Log[f])/(-(c*(a + b*x)^3*Log[f]))^(2/3) - (a*b*c*(a
+ b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])]*Log[f])/(-(c*(a + b*x)
^3*Log[f]))^(1/3) + 3*a^2*b*c*Log[f]*Unintegrable[f^(c*(a + b*x)^
3)/x, x]
```

Rubi [A] time = 0.482874, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\mathrm{Int}\left(\frac{f^{c(a+bx)^3}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c*(a + b*x)^3)/x^2,x]
```

```
[Out] -(f^(c*(a + b*x)^3)/x) - (b*c*(a + b*x)^2*Gamma[2/3, -(c*(a + b*x
)^3*Log[f])]*Log[f])/(-(c*(a + b*x)^3*Log[f]))^(2/3) - (a*b*c*(a
+ b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])]*Log[f])/(-(c*(a + b*x)
^3*Log[f]))^(1/3) + 3*a^2*b*c*Log[f]*Defer[Int][f^(c*(a + b*x)^3)
/x, x]
```

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

$$3bc\log(f)\int\frac{f^{c(a+bx)^3}(a+bx)^2}{x}\,dx-\frac{f^{c(a+bx)^3}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*(b*x+a)**3)/x**2,x)
```

```
[Out] 3*b*c*log(f)*Integral(f**(c*(a + b*x)**3)*(a + b*x)**2/x, x) - f*
*(c*(a + b*x)**3)/x
```

Mathematica [A] time = 1.57892, size = 0, normalized size = 0.

$$\int\frac{f^{c(a+bx)^3}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c*(a + b*x)^3)/x^2,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^3)/x^2, x]
```

Maple [A] time = 0.027, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^3}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3)/x^2,x)
```

```
[Out] int(f^(c*(b*x+a)^3)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^3 c}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^((b*x + a)^3*c)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{b^3cx^3+3\,ab^2cx^2+3\,a^2bcx+a^3c}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(f^(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)/x^2,
 x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^3}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3)/x**2,x)
```

```
[Out] Integral(f**(c*(a + b*x)**3)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^3 c}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^((b*x + a)^3*c)/x^2, x)
```

3.207 $\int \frac{f^{c(a+bx)^3}}{x^3} \, dx$

Optimal. Leaf size=263

$$\frac{9}{2}a^4b^2c^2\log^2(f)\text{Int}\left(\frac{f^{c(a+bx)^3}}{x},x\right)-\frac{3a^3b^2c^2\log^2(f)(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{2\sqrt[3]{-c\log(f)(a+bx)^3}}-\frac{3a^2b^2c^2\log^2(f)(a+bx)^2\text{Gamma}\left(\frac{2}{3},-c\log(f)(a+bx)^3\right)}{2\left(-c\log(f)(a+bx)^3\right)^{2/3}}+3ab^2c\log(f)\text{Int}\left(\frac{f^{c(a+bx)^3}}{x},x\right)-\frac{b^2c\log(f)(a+bx)\text{Gamma}\left(\frac{1}{3},-c\log(f)(a+bx)^3\right)}{2\sqrt[3]{-c\log(f)(a+bx)^3}}-\frac{3a^2bc\log(f)f^{c(a+bx)^3}}{2x}-\frac{f^{c(a+bx)^3}}{2x^2}$$

```
[Out] -f^(c*(a + b*x)^3)/(2*x^2) - (3*a^2*b*c*f^(c*(a + b*x)^3)*Log[f])
/(2*x) - (3*a^2*b^2*c^2*(a + b*x)^2*Gamma[2/3, -(c*(a + b*x)^3*Lo
g[f])]*Log[f]^2)/(2*(-(c*(a + b*x)^3*Log[f]))^(2/3)) - (b^2*c*(a
+ b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])]*Log[f])/(2*(-(c*(a + b
*x)^3*Log[f]))^(1/3)) - (3*a^3*b^2*c^2*(a + b*x)*Gamma[1/3, -(c*(
a + b*x)^3*Log[f])]*Log[f]^2)/(2*(-(c*(a + b*x)^3*Log[f]))^(1/3))
 + 3*a*b^2*c*Log[f]*Unintegrable[f^(c*(a + b*x)^3)/x, x] + (9*a^4
*b^2*c^2*Log[f]^2*Unintegrable[f^(c*(a + b*x)^3)/x, x])/2
```

Rubi [A] time = 0.772062, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{c(a+bx)^3}}{x^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^3)/x^3,x]
```

```
[Out] -f^(c*(a + b*x)^3)/(2*x^2) - (3*a^2*b*c*f^(c*(a + b*x)^3)*Log[f])
/(2*x) - (3*a^2*b^2*c^2*(a + b*x)^2*Gamma[2/3, -(c*(a + b*x)^3*Lo
g[f])]*Log[f]^2)/(2*(-(c*(a + b*x)^3*Log[f]))^(2/3)) - (b^2*c*(a
+ b*x)*Gamma[1/3, -(c*(a + b*x)^3*Log[f])]*Log[f])/(2*(-(c*(a + b
*x)^3*Log[f]))^(1/3)) - (3*a^3*b^2*c^2*(a + b*x)*Gamma[1/3, -(c*(
a + b*x)^3*Log[f])]*Log[f]^2)/(2*(-(c*(a + b*x)^3*Log[f]))^(1/3))
 + 3*a*b^2*c*Log[f]*Defer[Int][f^(c*(a + b*x)^3)/x, x] + (9*a^4*b
^2*c^2*Log[f]^2*Defer[Int][f^(c*(a + b*x)^3)/x, x])/2
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**3)/x**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 2.0344, size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^3}}{x^3} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^3)/x^3,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^3)/x^3, x]
```

Maple [A] time = 0.035, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^3}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3)/x^3,x)
```

```
[Out] int(f^(c*(b*x+a)^3)/x^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^3c}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)/x^3,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^3*c)/x^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{b^3cx^3+3\,ab^2cx^2+3\,a^2bcx+a^3c}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)/x^3,x, algorithm="fricas")
```

```
[Out] integral(f^(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)/x^3,
 x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^3}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3)/x**3,x)
```

```
[Out] Integral(f**(c*(a + b*x)**3)/x**3, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^3c}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)/x^3,x, algorithm="giac")

[Out] integrate(f^((b*x + a)^3*c)/x^3, x)
```

3.208 $\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^4\,dx$

Optimal. Leaf size=183

$$-\frac{a^4(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^5\sqrt[3]{-(a+bx)^3}}+\frac{4a^3(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{2/3}}-\frac{(a+bx)^5\text{Gamma}\left(\frac{5}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{5/3}}+\frac{4a(a+bx)^4\text{Gamma}\left(\frac{4}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{4/3}}+\frac{2a^2e^{(a+bx)^3}}{b^5}$$

```
[Out] (2*a^2*E^(a + b*x)^3)/b^5 - (a^4*(a + b*x)*Gamma[1/3, -(a + b*x)^
3])/(3*b^5*(-(a + b*x)^3)^(1/3)) + (4*a^3*(a + b*x)^2*Gamma[2/3,
-(a + b*x)^3])/(3*b^5*(-(a + b*x)^3)^(2/3)) + (4*a*(a + b*x)^4*Ga
mma[4/3, -(a + b*x)^3])/(3*b^5*(-(a + b*x)^3)^(4/3)) - ((a + b*x)
^5*Gamma[5/3, -(a + b*x)^3])/(3*b^5*(-(a + b*x)^3)^(5/3))
```

Rubi [A] time = 0.308337, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$

$$-\frac{a^4(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^5\sqrt[3]{-(a+bx)^3}}+\frac{4a^3(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{2/3}}-\frac{(a+bx)^5\text{Gamma}\left(\frac{5}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{5/3}}+\frac{4a(a+bx)^4\text{Gamma}\left(\frac{4}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{4/3}}+\frac{2a^2e^{(a+bx)^3}}{b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^4,x]
```

```
[Out] (2*a^2*E^(a + b*x)^3)/b^5 - (a^4*(a + b*x)*Gamma[1/3, -(a + b*x)^
3])/(3*b^5*(-(a + b*x)^3)^(1/3)) + (4*a^3*(a + b*x)^2*Gamma[2/3,
-(a + b*x)^3])/(3*b^5*(-(a + b*x)^3)^(2/3)) + (4*a*(a + b*x)^4*Ga
mma[4/3, -(a + b*x)^3])/(3*b^5*(-(a + b*x)^3)^(4/3)) - ((a + b*x)
^5*Gamma[5/3, -(a + b*x)^3])/(3*b^5*(-(a + b*x)^3)^(5/3))
```

Rubi in Sympy [A] time = 31.0245, size = 168, normalized size = 0.92

$$-\frac{a^4(a+bx)\left(\frac{1}{3},-(a+bx)^3\right)}{3b^5\sqrt[3]{-(a+bx)^3}}+\frac{4a^3(a+bx)^2\left(\frac{2}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{\frac{2}{3}}}+\frac{2a^2e^{(a+bx)^3}}{b^5}+\frac{4a(a+bx)^4\left(\frac{4}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{\frac{4}{3}}}-\frac{(a+bx)^5\left(\frac{5}{3},-(a+bx)^3\right)}{3b^5\left(-(a+bx)^3\right)^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**4,x)
```

```
[Out] -a**4*(a + b*x)*Gamma(1/3, -(a + b*x)**3)/(3*b**5*(-(a + b*x)**3)
**(1/3)) + 4*a**3*(a + b*x)**2*Gamma(2/3, -(a + b*x)**3)/(3*b**5*
(-(a + b*x)**3)**(2/3)) + 2*a**2*exp((a + b*x)**3)/b**5 + 4*a*(a
+ b*x)**4*Gamma(4/3, -(a + b*x)**3)/(3*b**5*(-(a + b*x)**3)**(4/3
)) - (a + b*x)**5*Gamma(5/3, -(a + b*x)**3)/(3*b**5*(-(a + b*x)**
3)**(5/3))
```

Mathematica [A] time = 0.353107, size = 0, normalized size = 0.

$$\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^4\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^4,x]
```

```
[Out] Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^4, x]
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^4,x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^4e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="maxima")
```

```
[Out] integrate(x^4*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Fricas [A] time = 0.253163, size = 220, normalized size = 1.2

$$\frac{2\left(6\,a^3+1\right)b^2\left(\frac{2}{3},-b^3x^3-3\,ab^2x^2-3\,a^2bx-a^3\right)-\left(3\,a^4+4\,a\right)\left(-b^3\right)^{\frac{1}{3}}b\left(\frac{1}{3},-b^3x^3-3\,ab^2x^2-3\,a^2bx-a^3\right)+3\left(b^2x^2-2\right.}{9\left(-b^3\right)^{\frac{2}{3}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="fricas")
```

```
[Out] 1/9*(2*(6*a^3 + 1)*b^2*gamma(2/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*
b*x - a^3) - (3*a^4 + 4*a)*(-b^3)^(1/3)*b*gamma(1/3, -b^3*x^3 - 3
*a*b^2*x^2 - 3*a^2*b*x - a^3) + 3*(b^2*x^2 - 2*a*b*x + 3*a^2)*(-b
^3)^(2/3)*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/((-b^3)^(2
/3)*b^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int x^4 e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="giac")
```

```
[Out] integrate(x^4*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

3.209 $\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^3\,dx$

Optimal. Leaf size=138

$$\frac{a^3(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^4\sqrt[3]{-(a+bx)^3}}-\frac{a^2(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{b^4\left(-(a+bx)^3\right)^{2/3}}-\frac{(a+bx)^4\text{Gamma}\left(\frac{4}{3},-(a+bx)^3\right)}{3b^4\left(-(a+bx)^3\right)^{4/3}}-\frac{ae^{(a+bx)^3}}{b^4}$$

```
[Out] -((a*E^(a + b*x)^3)/b^4) + (a^3*(a + b*x)*Gamma[1/3, -(a + b*x)^3
])/(3*b^4*(-(a + b*x)^3)^(1/3)) - (a^2*(a + b*x)^2*Gamma[2/3, -(a
 + b*x)^3])/(b^4*(-(a + b*x)^3)^(2/3)) - ((a + b*x)^4*Gamma[4/3,
-(a + b*x)^3])/(3*b^4*(-(a + b*x)^3)^(4/3))
```

Rubi [A] time = 0.257199, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152

$$\frac{a^3(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^4\sqrt[3]{-(a+bx)^3}}-\frac{a^2(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{b^4\left(-(a+bx)^3\right)^{2/3}}-\frac{(a+bx)^4\text{Gamma}\left(\frac{4}{3},-(a+bx)^3\right)}{3b^4\left(-(a+bx)^3\right)^{4/3}}-\frac{ae^{(a+bx)^3}}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^3,x]
```

```
[Out] -((a*E^(a + b*x)^3)/b^4) + (a^3*(a + b*x)*Gamma[1/3, -(a + b*x)^3
])/(3*b^4*(-(a + b*x)^3)^(1/3)) - (a^2*(a + b*x)^2*Gamma[2/3, -(a
 + b*x)^3])/(b^4*(-(a + b*x)^3)^(2/3)) - ((a + b*x)^4*Gamma[4/3,
-(a + b*x)^3])/(3*b^4*(-(a + b*x)^3)^(4/3))
```

Rubi in Sympy [A] time = 23.7795, size = 122, normalized size = 0.88

$$\frac{a^3\left(a+bx\right)\left(\frac{1}{3},-\left(a+bx\right)^3\right)}{3b^4\sqrt[3]{-\left(a+bx\right)^3}}-\frac{a^2\left(a+bx\right)^2\left(\frac{2}{3},-\left(a+bx\right)^3\right)}{b^4\left(-\left(a+bx\right)^3\right)^{\frac{2}{3}}}-\frac{ae^{(a+bx)^3}}{b^4}-\frac{\left(a+bx\right)^4\left(\frac{4}{3},-\left(a+bx\right)^3\right)}{3b^4\left(-\left(a+bx\right)^3\right)^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**3,x)
```

```
[Out] a**3*(a + b*x)*Gamma(1/3, -(a + b*x)**3)/(3*b**4*(-(a + b*x)**3)*
*(1/3)) - a**2*(a + b*x)**2*Gamma(2/3, -(a + b*x)**3)/(b**4*(-(a
+ b*x)**3)**(2/3)) - a*exp((a + b*x)**3)/b**4 - (a + b*x)**4*Gamm
a(4/3, -(a + b*x)**3)/(3*b**4*(-(a + b*x)**3)**(4/3))
```

Mathematica [A] time = 0.274358, size = 0, normalized size = 0.

$$\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^3\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^3,x]
```

```
[Out] Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^3, x]
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^3,x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^3e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="maxima")
```

```
[Out] integrate(x^3*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Fricas [A] time = 0.260515, size = 197, normalized size = 1.43

$$-\frac{9\,a^2b^2\left(\frac{2}{3},-b^3x^3-3\,ab^2x^2-3\,a^2bx-a^3\right)-\left(3\,a^3+1\right)\left(-b^3\right)^{\frac{1}{3}}b\left(\frac{1}{3},-b^3x^3-3\,ab^2x^2-3\,a^2bx-a^3\right)-3\left(-b^3\right)^{\frac{2}{3}}(bx-2\,a}{9\left(-b^3\right)^{\frac{2}{3}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="fricas")
```

```
[Out] -1/9*(9*a^2*b^2*gamma(2/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*b*x - a
^3) - (3*a^3 + 1)*(-b^3)^(1/3)*b*gamma(1/3, -b^3*x^3 - 3*a*b^2*x^
2 - 3*a^2*b*x - a^3) - 3*(-b^3)^(2/3)*(b*x - 2*a)*e^(b^3*x^3 + 3*
a*b^2*x^2 + 3*a^2*b*x + a^3))/((-b^3)^(2/3)*b^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int x^3e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="giac")

[Out] integrate(x^3*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

3.210 $\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^2\,dx$

Optimal. Leaf size=99

$$-\frac{a^2(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^3\sqrt[3]{-(a+bx)^3}}+\frac{2a(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^3\left(-(a+bx)^3\right)^{2/3}}+\frac{e^{(a+bx)^3}}{3b^3}$$

```
[Out] E^(a + b*x)^3/(3*b^3) - (a^2*(a + b*x)*Gamma[1/3, -(a + b*x)^3])/
(3*b^3*(-(a + b*x)^3)^(1/3)) + (2*a*(a + b*x)^2*Gamma[2/3, -(a +
b*x)^3])/(3*b^3*(-(a + b*x)^3)^(2/3))
```

Rubi [A] time = 0.191714, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152

$$-\frac{a^2(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^3\sqrt[3]{-(a+bx)^3}}+\frac{2a(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^3\left(-(a+bx)^3\right)^{2/3}}+\frac{e^{(a+bx)^3}}{3b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^2,x]
```

```
[Out] E^(a + b*x)^3/(3*b^3) - (a^2*(a + b*x)*Gamma[1/3, -(a + b*x)^3])/
(3*b^3*(-(a + b*x)^3)^(1/3)) + (2*a*(a + b*x)^2*Gamma[2/3, -(a +
b*x)^3])/(3*b^3*(-(a + b*x)^3)^(2/3))
```

Rubi in Sympy [A] time = 17.3054, size = 88, normalized size = 0.89

$$-\frac{a^2\left(a+bx\right)\left(\frac{1}{3},-\left(a+bx\right)^3\right)}{3b^3\sqrt[3]{-\left(a+bx\right)^3}}+\frac{2a\left(a+bx\right)^2\left(\frac{2}{3},-\left(a+bx\right)^3\right)}{3b^3\left(-\left(a+bx\right)^3\right)^{\frac{2}{3}}}+\frac{e^{(a+bx)^3}}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**2,x)
```

```
[Out] -a**2*(a + b*x)*Gamma(1/3, -(a + b*x)**3)/(3*b**3*(-(a + b*x)**3)
**(1/3)) + 2*a*(a + b*x)**2*Gamma(2/3, -(a + b*x)**3)/(3*b**3*(-(
a + b*x)**3)**(2/3)) + exp((a + b*x)**3)/(3*b**3)
```

Mathematica [A] time = 0.194092, size = 0, normalized size = 0.

$$\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^2\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^2,x]
```

```
[Out] Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^2, x]
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^2,x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Fricas [A] time = 0.258763, size = 178, normalized size = 1.8

$$-\frac{\left(-b^3\right)^{\frac{1}{3}}a^2b\left(\frac{1}{3},-b^3x^3-3\,ab^2x^2-3\,a^2bx-a^3\right)-2\,ab^2\left(\frac{2}{3},-b^3x^3-3\,ab^2x^2-3\,a^2bx-a^3\right)-\left(-b^3\right)^{\frac{2}{3}}e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+\right.}}{3\left(-b^3\right)^{\frac{2}{3}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="fricas")
```

```
[Out] -1/3*((-b^3)^(1/3)*a^2*b*gamma(1/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^
2*b*x - a^3) - 2*a*b^2*gamma(2/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*
b*x - a^3) - (-b^3)^(2/3)*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x +
a^3))/((-b^3)^(2/3)*b^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int x^2 e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="giac")
```

```
[Out] integrate(x^2*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

3.211 $\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x\,dx$

Optimal. Leaf size=80

$$\frac{a(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^2\sqrt[3]{-(a+bx)^3}}-\frac{(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^2\left(-(a+bx)^3\right)^{2/3}}$$

```
[Out] (a*(a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)^(1/3
)) - ((a + b*x)^2*Gamma[2/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)
^(2/3))
```

Rubi [A] time = 0.116855, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129

$$\frac{a(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^2\sqrt[3]{-(a+bx)^3}}-\frac{(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^2\left(-(a+bx)^3\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x,x]
```

```
[Out] (a*(a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)^(1/3
)) - ((a + b*x)^2*Gamma[2/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)
^(2/3))
```

Rubi in Sympy [A] time = 9.48601, size = 70, normalized size = 0.88

$$\frac{a\left(a+bx\right)\left(\frac{1}{3},-\left(a+bx\right)^3\right)}{3b^2\sqrt[3]{-\left(a+bx\right)^3}}-\frac{\left(a+bx\right)^2\left(\frac{2}{3},-\left(a+bx\right)^3\right)}{3b^2\left(-\left(a+bx\right)^3\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x,x)
```

```
[Out] a*(a + b*x)*Gamma(1/3, -(a + b*x)**3)/(3*b**2*(-(a + b*x)**3)**(1
/3)) - (a + b*x)**2*Gamma(2/3, -(a + b*x)**3)/(3*b**2*(-(a + b*x)
**3)**(2/3))
```

Mathematica [A] time = 0.41048, size = 0, normalized size = 0.

$$\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x,x]
```

```
[Out] Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x, x]
```

Maple [F] time = 0.021, size = 0, normalized size = 0.

$$\int e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x,x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="maxima")
```

```
[Out] integrate(x*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Fricas [A] time = 0.262265, size = 120, normalized size = 1.5

$$\frac{\left(-b^3\right)^{\frac{1}{3}} a\left(\frac{1}{3}, -b^3x^3 - 3\,ab^2x^2 - 3\,a^2bx - a^3\right) - b\left(\frac{2}{3}, -b^3x^3 - 3\,ab^2x^2 - 3\,a^2bx - a^3\right)}{3\,\left(-b^3\right)^{\frac{2}{3}}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="fricas")
```

```
[Out] 1/3*((-b^3)^(1/3)*a*gamma(1/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*b*x
 - a^3) - b*gamma(2/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*b*x - a^3))
/((-b^3)^(2/3)*b)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="giac")
```

```
[Out] integrate(x*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

3.212 $\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx$

Optimal. Leaf size=38

$$-\frac{(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b\sqrt[3]{-(a+bx)^3}}$$

```
[Out] -((a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b*(-(a + b*x)^3)^(1/3))
```

Rubi [A] time = 0.0190524, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$

$$-\frac{(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b\sqrt[3]{-(a+bx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3),x]

[Out] -((a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b*(-(a + b*x)^3)^(1/3))
```

Rubi in Sympy [A] time = 1.96222, size = 32, normalized size = 0.84

$$-\frac{(a+bx)\left(\frac{1}{3},-(a+bx)^3\right)}{3b\sqrt[3]{-(a+bx)^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3),x)

[Out] -(a + b*x)*Gamma(1/3, -(a + b*x)**3)/(3*b*(-(a + b*x)**3)**(1/3))
```

Mathematica [A] time = 0.00349965, size = 38, normalized size = 1.

$$-\frac{(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b\sqrt[3]{-(a+bx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3),x]

[Out] -((a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b*(-(a + b*x)^3)^(1/3))
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3),x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="maxima")
```

```
[Out] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Fricas [A] time = 0.277683, size = 55, normalized size = 1.45

$$-\frac{\left(\frac{1}{3}, -b^3x^3 - 3\,ab^2x^2 - 3\,a^2bx - a^3\right)}{3\,\left(-b^3\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="fricas")
```

```
[Out] -1/3*gamma(1/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*b*x - a^3)/(-b^3)^
(1/3)
```

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

$$e^{a^3}\int e^{b^3x^3}e^{3ab^2x^2}e^{3a^2bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3),x)
```

```
[Out] exp(a**3)*Integral(exp(b**3*x**3)*exp(3*a*b**2*x**2)*exp(3*a**2*b
*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="giac")
```

```
[Out] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

3.213 $\int \frac{e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}}{x} \, dx$

Optimal. Leaf size=36

$$\text{Int}\left(\frac{e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}}{x},x\right)$$

```
[Out] CannotIntegrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)/x, x]
```

Rubi [A] time = 0.141259, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)/x,x]

[Out] Defer[Int][E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)/x, x]
```

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

$$\int \frac{e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)/x,x)

[Out] Integral(exp(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3)/x, x)
```

Mathematica [A] time = 0.326581, size = 0, normalized size = 0.

$$\int \frac{e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}}{x} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)/x,x]

[Out] Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)/x, x]
```

Maple [A] time = 0.021, size = 0, normalized size = 0.

$$\int \frac{e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)/x,x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)/x,x, algorithm="maxima")
```

```
[Out] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)/x,x, algorithm="fricas")
```

```
[Out] integral(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$e^{a^3}\int \frac{e^{b^3x^3}e^{3ab^2x^2}e^{3a^2bx}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)/x,x)
```

```
[Out] exp(a**3)*Integral(exp(b**3*x**3)*exp(3*a*b**2*x**2)*exp(3*a**2*b
*x)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)/x,x, algorithm="giac")
```

```
[Out] integrate(e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)/x, x)
```

3.214 $\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^m\,dx$

Optimal. Leaf size=36

$$\mathrm{Int}\left(x^m e^{a^3+3a^2bx+3ab^2x^2+b^3x^3},x\right)$$

```
[Out] CannotIntegrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^m,
x]
```

Rubi [A] time = 0.14222, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\mathrm{Int}\left(e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^m,x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^m,x]

[Out] Defer[Int][E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^m, x]
```

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

$$\int x^m e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**m,x)

[Out] Integral(x**m*exp(a**3 + 3*a**2*b*x + 3*a*b**2*x**2 + b**3*x**3),
 x)
```

Mathematica [A] time = 0.251999, size = 0, normalized size = 0.

$$\int e^{a^3+3a^2bx+3ab^2x^2+b^3x^3}x^m\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^m,x]

[Out] Integrate[E^(a^3 + 3*a^2*b*x + 3*a*b^2*x^2 + b^3*x^3)*x^m, x]
```

Maple [A] time = 0.042, size = 0, normalized size = 0.

$$\int e^{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^m,x)
```

```
[Out] int(exp(b^3*x^3+3*a*b^2*x^2+3*a^2*b*x+a^3)*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int x^m e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="maxima")
```

```
[Out] integrate(x^m*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(x^m e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="fricas")
```

```
[Out] integral(x^m*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(b**3*x**3+3*a*b**2*x**2+3*a**2*b*x+a**3)*x**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int x^m e^{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3),x, algorithm="giac")
```

```
[Out] integrate(x^m*e^(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

3.215 $\int e^{\sqrt{5+3x}}\,dx$

Optimal. Leaf size=40

$$\frac{2}{3}e^{\sqrt{3x+5}}\sqrt{3x+5}-\frac{2}{3}e^{\sqrt{3x+5}}$$

```
[Out] (-2*E^Sqrt[5 + 3*x])/3 + (2*E^Sqrt[5 + 3*x]*Sqrt[5 + 3*x])/3
```

Rubi [A] time = 0.0237203, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\frac{2}{3}e^{\sqrt{3x+5}}\sqrt{3x+5}-\frac{2}{3}e^{\sqrt{3x+5}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^Sqrt[5 + 3*x],x]

[Out] (-2*E^Sqrt[5 + 3*x])/3 + (2*E^Sqrt[5 + 3*x]*Sqrt[5 + 3*x])/3
```

Rubi in Sympy [A] time = 2.34, size = 34, normalized size = 0.85

$$\frac{2\sqrt{3x+5}e^{\sqrt{3x+5}}}{3}-\frac{2e^{\sqrt{3x+5}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((5+3*x)**(1/2)),x)

[Out] 2*sqrt(3*x + 5)*exp(sqrt(3*x + 5))/3 - 2*exp(sqrt(3*x + 5))/3
```

Mathematica [A] time = 0.00638654, size = 26, normalized size = 0.65

$$\frac{2}{3}e^{\sqrt{3x+5}}\left(\sqrt{3x+5}-1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^Sqrt[5 + 3*x],x]

[Out] (2*E^Sqrt[5 + 3*x]*(-1 + Sqrt[5 + 3*x]))/3
```

Maple [A] time = 0.004, size = 29, normalized size = 0.7

$$-\frac{2}{3}e^{\sqrt{5+3x}}+\frac{2}{3}e^{\sqrt{5+3x}}\sqrt{5+3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((5+3*x)^(1/2)),x)
```

```
[Out] -2/3*exp((5+3*x)^(1/2))+2/3*exp((5+3*x)^(1/2))*(5+3*x)^(1/2)
```

Maxima [A] time = 0.767162, size = 26, normalized size = 0.65

$$\frac{2}{3}\left(\sqrt{3\,x+5}-1\right)e^{\left(\sqrt{3\,x+5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(sqrt(3*x + 5)),x, algorithm="maxima")
```

```
[Out] 2/3*(sqrt(3*x + 5) - 1)*e^(sqrt(3*x + 5))
```

Fricas [A] time = 0.253385, size = 26, normalized size = 0.65

$$\frac{2}{3}\left(\sqrt{3\,x+5}-1\right)e^{\left(\sqrt{3\,x+5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(sqrt(3*x + 5)),x, algorithm="fricas")
```

```
[Out] 2/3*(sqrt(3*x + 5) - 1)*e^(sqrt(3*x + 5))
```

Sympy [A] time = 0.464307, size = 34, normalized size = 0.85

$$\frac{2\sqrt{3x+5}e^{\sqrt{3x+5}}}{3}-\frac{2e^{\sqrt{3x+5}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((5+3*x)**(1/2)),x)
```

```
[Out] 2*sqrt(3*x + 5)*exp(sqrt(3*x + 5))/3 - 2*exp(sqrt(3*x + 5))/3
```

GIAC/XCAS [A] time = 0.277843, size = 28, normalized size = 0.7

$$\frac{2}{3}\left(\sqrt{3\,x+5}-1\right)e^{\left(\sqrt{3\,x+5}\right)}+\frac{2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(sqrt(3*x + 5)),x, algorithm="giac")
```

```
[Out] 2/3*(sqrt(3*x + 5) - 1)*e^(sqrt(3*x + 5)) + 2/3
```

3.216 $\int f^{\frac{c}{a+bx}} x^4\,dx$

Optimal. Leaf size=291

$$-\frac{c^5\log^5(f)\text{Gamma}\left(-5,-\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{4ac^4\log^4(f)\text{Gamma}\left(-4,-\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{a^4c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}+\frac{a^4(a+bx)f^{\frac{c}{a+bx}}}{b^5}+\frac{2a^3c^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{2a^3(a+bx)^2f^{\frac{c}{a+bx}}}{b^5}-\frac{2a^3c\log(f)(a+bx)f^{\frac{c}{a+bx}}}{b^5}-\frac{a^2c^3\log^3(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}+\frac{a^2c^2\log^2(f)(a+bx)f^{\frac{c}{a+bx}}}{b^5}+\frac{2a^2(a+bx)^3f^{\frac{c}{a+bx}}}{b^5}+\frac{a^2c\log(f)(a+bx)^2f^{\frac{c}{a+bx}}}{b^5}$$

```
[Out] (a^4*f^(c/(a + b*x))*(a + b*x))/b^5 - (2*a^3*f^(c/(a + b*x))*(a +
 b*x)^2)/b^5 + (2*a^2*f^(c/(a + b*x))*(a + b*x)^3)/b^5 - (2*a^3*c
*f^(c/(a + b*x))*(a + b*x)*Log[f])/b^5 + (a^2*c*f^(c/(a + b*x))*(
a + b*x)^2*Log[f])/b^5 - (a^4*c*ExpIntegralEi[(c*Log[f])/(a + b*x
)]*Log[f])/b^5 + (a^2*c^2*f^(c/(a + b*x))*(a + b*x)*Log[f]^2)/b^5
 + (2*a^3*c^2*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]^2)/b^5 -
 (a^2*c^3*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]^3)/b^5 - (4*
a*c^4*Gamma[-4, -((c*Log[f])/(a + b*x))]*Log[f]^4)/b^5 - (c^5*Gam
ma[-5, -((c*Log[f])/(a + b*x))]*Log[f]^5)/b^5
```

Rubi [A] time = 0.516735, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{c^5\log^5(f)\text{Gamma}\left(-5,-\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{4ac^4\log^4(f)\text{Gamma}\left(-4,-\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{a^4c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}+\frac{a^4(a+bx)f^{\frac{c}{a+bx}}}{b^5}+\frac{2a^3c^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{2a^3(a+bx)^2f^{\frac{c}{a+bx}}}{b^5}-\frac{2a^3c\log(f)(a+bx)f^{\frac{c}{a+bx}}}{b^5}-\frac{a^2c^3\log^3(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}+\frac{a^2c^2\log^2(f)(a+bx)f^{\frac{c}{a+bx}}}{b^5}+\frac{2a^2(a+bx)^3f^{\frac{c}{a+bx}}}{b^5}+\frac{a^2c\log(f)(a+bx)^2f^{\frac{c}{a+bx}}}{b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))*x^4,x]
```


```
[Out] (a^4*f^(c/(a + b*x))*(a + b*x))/b^5 - (2*a^3*f^(c/(a + b*x))*(a +
 b*x)^2)/b^5 + (2*a^2*f^(c/(a + b*x))*(a + b*x)^3)/b^5 - (2*a^3*c
*f^(c/(a + b*x))*(a + b*x)*Log[f])/b^5 + (a^2*c*f^(c/(a + b*x))*(
a + b*x)^2*Log[f])/b^5 - (a^4*c*ExpIntegralEi[(c*Log[f])/(a + b*x
)]*Log[f])/b^5 + (a^2*c^2*f^(c/(a + b*x))*(a + b*x)*Log[f]^2)/b^5
 + (2*a^3*c^2*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]^2)/b^5 -
 (a^2*c^3*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]^3)/b^5 - (4*
a*c^4*Gamma[-4, -((c*Log[f])/(a + b*x))]*Log[f]^4)/b^5 - (c^5*Gam
ma[-5, -((c*Log[f])/(a + b*x))]*Log[f]^5)/b^5
```

Rubi in Sympy [A] time = 59.9666, size = 287, normalized size = 0.99

$$-\frac{a^4c\log(f)\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}+\frac{a^4f^{\frac{c}{a+bx}}(a+bx)}{b^5}+\frac{2a^3c^2\log(f)^2\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}-\frac{2a^3cf^{\frac{c}{a+bx}}(a+bx)\log(f)}{b^5}-\frac{2a^3f^{\frac{c}{a+bx}}(a+bx)^2}{b^5}-\frac{a^2c^3\log(f)^3\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b^5}+\frac{a^2c^2f^{\frac{c}{a+bx}}(a+bx)\log(f)^2}{b^5}+\frac{a^2cf^{\frac{c}{a+bx}}(a+bx)^2\log(f)}{b^5}+\frac{2a^2f^{\frac{c}{a+bx}}(a+bx)^3}{b^5}-\frac{4ac^4\Gamma\left(-4,-\frac{c\log(f)}{a+bx}\right)\log(f)^4}{b^5}-\frac{c^5\Gamma\left(-5,-\frac{c\log(f)}{a+bx}\right)\log(f)^5}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))*x**4,x)
```

```
[Out] -a**4*c*log(f)*Ei(c*log(f)/(a + b*x))/b**5 + a**4*f**(c/(a + b*x)
)*(a + b*x)/b**5 + 2*a**3*c**2*log(f)**2*Ei(c*log(f)/(a + b*x))/b
**5 - 2*a**3*c*f**(c/(a + b*x))*(a + b*x)*log(f)/b**5 - 2*a**3*f*
*(c/(a + b*x))*(a + b*x)**2/b**5 - a**2*c**3*log(f)**3*Ei(c*log(f
)/(a + b*x))/b**5 + a**2*c**2*f**(c/(a + b*x))*(a + b*x)*log(f)**
2/b**5 + a**2*c*f**(c/(a + b*x))*(a + b*x)**2*log(f)/b**5 + 2*a**
2*f**(c/(a + b*x))*(a + b*x)**3/b**5 - 4*a*c**4*Gamma(-4, -c*log(
f)/(a + b*x))*log(f)**4/b**5 - c**5*Gamma(-5, -c*log(f)/(a + b*x)
)*log(f)**5/b**5
```

Mathematica [A] time = 0.225507, size = 241, normalized size = 0.83

$$\frac{a\left(24a^4-154a^3c\log(f)+102a^2c^2\log^2(f)-19ac^3\log^3(f)+c^4\log^4(f)\right)f^{\frac{c}{a+bx}}}{120b^5}+\frac{bxf^{\frac{c}{a+bx}}\left(2c^2\log^2(f)\left(43a^2-7abx+b^2x^2\right)+2c\log(f)\left(-48a^3+18a^2bx-8ab^2x^2+3b^3x^3\right)+c^3\log^3(f)(bx-18a)+24b^4\right.}{12}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))*x^4,x]
```

```
[Out] (a*f^(c/(a + b*x))*(24*a^4 - 154*a^3*c*Log[f] + 102*a^2*c^2*Log[f
]^2 - 19*a*c^3*Log[f]^3 + c^4*Log[f]^4))/(120*b^5) + (-(c*ExpInte
gralEi[(c*Log[f])/(a + b*x)]*Log[f]*(120*a^4 - 240*a^3*c*Log[f] +
 120*a^2*c^2*Log[f]^2 - 20*a*c^3*Log[f]^3 + c^4*Log[f]^4)) + b*f^
(c/(a + b*x))*x*(24*b^4*x^4 + 2*c*(-48*a^3 + 18*a^2*b*x - 8*a*b^2
*x^2 + 3*b^3*x^3)*Log[f] + 2*c^2*(43*a^2 - 7*a*b*x + b^2*x^2)*Log
[f]^2 + c^3*(-18*a + b*x)*Log[f]^3 + c^4*Log[f]^4))/(120*b^5)
```

Maple [A] time = 0.054, size = 517, normalized size = 1.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a))*x^4,x)
```

```
[Out] -7/60*ln(f)^2*c^2/b^3*f^(c/(b*x+a))*a*x^2+43/60*ln(f)^2*c^2/b^4*f
^(c/(b*x+a))*a^2*x-3/20*ln(f)^3*c^3/b^4*f^(c/(b*x+a))*a*x+ln(f)*c
/b^5*a^4*Ei(1,-c*ln(f)/(b*x+a))-77/60*ln(f)*c/b^5*f^(c/(b*x+a))*a
^4-2*ln(f)^2*c^2/b^5*a^3*Ei(1,-c*ln(f)/(b*x+a))+ln(f)^3*c^3/b^5*a
```

```
^2*Ei(1,-c*ln(f)/(b*x+a))-1/6*ln(f)^4*c^4/b^5*a*Ei(1,-c*ln(f)/(b*
x+a))-19/120*ln(f)^3*c^3/b^5*f^(c/(b*x+a))*a^2+1/120*ln(f)^4*c^4/
b^5*f^(c/(b*x+a))*a-2/15*ln(f)*c/b^2*f^(c/(b*x+a))*a*x^3+3/10*ln(
f)*c/b^3*f^(c/(b*x+a))*a^2*x^2-4/5*ln(f)*c/b^4*f^(c/(b*x+a))*a^3*
x+17/20*ln(f)^2*c^2/b^5*f^(c/(b*x+a))*a^3+1/5/b^5*a^5*f^(c/(b*x+a
))+1/20*ln(f)*c/b*f^(c/(b*x+a))*x^4+1/120*ln(f)^5*c^5/b^5*Ei(1,-c
*ln(f)/(b*x+a))+1/120*ln(f)^4*c^4/b^4*f^(c/(b*x+a))*x+1/5*f^(c/(b
*x+a))*x^5+1/60*ln(f)^2*c^2/b^2*f^(c/(b*x+a))*x^3+1/120*ln(f)^3*c
^3/b^3*f^(c/(b*x+a))*x^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(24\,b^4x^5 + 6\,b^3cx^4\log(f) + 2\left(b^2c^2\log(f)^2 - 8\,ab^2c\log(f)\right)x^3 + \left(bc^3\log(f)^3 - 14\,abc^2\log(f)^2 + 36\,a^2bc\log(f)\right)x^2 + \left(c^4\right.}{120\,b^4} + \int -\frac{\left(a^2c^4\log(f)^4 - 18\,a^3c^3\log(f)^3 + 86\,a^4c^2\log(f)^2 - 96\,a^5c\log(f) - \left(bc^5\log(f)^5 - 20\,abc^4\log(f)^4 + 120\,a^2bc^3\log(f)^3 - \right.\right.}{120\left(b^6x^2 + 2\,ab^5x + a^2b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/120*(24*b^4*x^5 + 6*b^3*c*x^4*log(f) + 2*(b^2*c^2*log(f)^2 - 8*
a*b^2*c*log(f))*x^3 + (b*c^3*log(f)^3 - 14*a*b*c^2*log(f)^2 + 36*
a^2*b*c*log(f))*x^2 + (c^4*log(f)^4 - 18*a*c^3*log(f)^3 + 86*a^2*
c^2*log(f)^2 - 96*a^3*c*log(f))*x)*f^(c/(b*x + a))/b^4 + integrat
e(-1/120*(a^2*c^4*log(f)^4 - 18*a^3*c^3*log(f)^3 + 86*a^4*c^2*log
(f)^2 - 96*a^5*c*log(f) - (b*c^5*log(f)^5 - 20*a*b*c^4*log(f)^4 +
 120*a^2*b*c^3*log(f)^3 - 240*a^3*b*c^2*log(f)^2 + 120*a^4*b*c*lo
g(f))*x)*f^(c/(b*x + a))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4), x)
```

Fricas [A] time = 0.260581, size = 328, normalized size = 1.13

$$\frac{\left(24\,b^5x^5 + 24\,a^5 + \left(bc^4x + ac^4\right)\log(f)^4 + \left(b^2c^3x^2 - 18\,abc^3x - 19\,a^2c^3\right)\log(f)^3 + 2\left(b^3c^2x^3 - 7\,ab^2c^2x^2 + 43\,a^2bc^2x + 51\,a\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/120*((24*b^5*x^5 + 24*a^5 + (b*c^4*x + a*c^4)*log(f)^4 + (b^2*c
^3*x^2 - 18*a*b*c^3*x - 19*a^2*c^3)*log(f)^3 + 2*(b^3*c^2*x^3 - 7
*a*b^2*c^2*x^2 + 43*a^2*b*c^2*x + 51*a^3*c^2)*log(f)^2 + 2*(3*b^4
*c*x^4 - 8*a*b^3*c*x^3 + 18*a^2*b^2*c*x^2 - 48*a^3*b*c*x - 77*a^4
*c)*log(f))*f^(c/(b*x + a)) - (c^5*log(f)^5 - 20*a*c^4*log(f)^4 +
 120*a^2*c^3*log(f)^3 - 240*a^3*c^2*log(f)^2 + 120*a^4*c*log(f))*
Ei(c*log(f)/(b*x + a)))/b^5
```

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

$$\int f^{\frac{c}{a+bx}}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))*x**4,x)
```

```
[Out] Integral(f**(c/(a + b*x))*x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}} x^4 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a))*x^4, x)
```

3.217 $\int f^{\frac{c}{a+bx}} x^3 \, dx$

Optimal. Leaf size=269

$$\frac{c^4\log^4(f)\text{Gamma}\left(-4,-\frac{c\log(f)}{a+bx}\right)}{b^4}+\frac{a^3c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^4}-\frac{a^3(a+bx)f^{\frac{c}{a+bx}}}{b^4}-\frac{3a^2c^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{2b^4}+\frac{3a^2(a+bx)^2f^{\frac{c}{a+bx}}}{2b^4}+\frac{3a^2c\log(f)(a+bx)f^{\frac{c}{a+bx}}}{2b^4}+\frac{ac^3\log^3(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{2b^4}-\frac{ac^2\log^2(f)(a+bx)f^{\frac{c}{a+bx}}}{2b^4}-\frac{a(a+bx)^3f^{\frac{c}{a+bx}}}{b^4}-\frac{ac\log(f)(a+bx)^2f^{\frac{c}{a+bx}}}{2b^4}$$

```
[Out] -((a^3*f^(c/(a + b*x))*(a + b*x))/b^4) + (3*a^2*f^(c/(a + b*x))*(
a + b*x)^2)/(2*b^4) - (a*f^(c/(a + b*x))*(a + b*x)^3)/b^4 + (3*a^
2*c*f^(c/(a + b*x))*(a + b*x)*Log[f])/(2*b^4) - (a*c*f^(c/(a + b*
x))*(a + b*x)^2*Log[f])/(2*b^4) + (a^3*c*ExpIntegralEi[(c*Log[f])
/(a + b*x)]*Log[f])/b^4 - (a*c^2*f^(c/(a + b*x))*(a + b*x)*Log[f]
^2)/(2*b^4) - (3*a^2*c^2*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[
f]^2)/(2*b^4) + (a*c^3*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]
^3)/(2*b^4) + (c^4*Gamma[-4, -((c*Log[f])/(a + b*x))]*Log[f]^4)/b
^4
```

Rubi [A] time = 0.449953, antiderivative size = 269, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{c^4\log^4(f)\text{Gamma}\left(-4,-\frac{c\log(f)}{a+bx}\right)}{b^4}+\frac{a^3c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^4}-\frac{a^3(a+bx)f^{\frac{c}{a+bx}}}{b^4}-\frac{3a^2c^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{2b^4}+\frac{3a^2(a+bx)^2f^{\frac{c}{a+bx}}}{2b^4}+\frac{3a^2c\log(f)(a+bx)f^{\frac{c}{a+bx}}}{2b^4}+\frac{ac^3\log^3(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{2b^4}-\frac{ac^2\log^2(f)(a+bx)f^{\frac{c}{a+bx}}}{2b^4}-\frac{a(a+bx)^3f^{\frac{c}{a+bx}}}{b^4}-\frac{ac\log(f)(a+bx)^2f^{\frac{c}{a+bx}}}{2b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))*x^3,x]
```


```
[Out] -((a^3*f^(c/(a + b*x))*(a + b*x))/b^4) + (3*a^2*f^(c/(a + b*x))*(
a + b*x)^2)/(2*b^4) - (a*f^(c/(a + b*x))*(a + b*x)^3)/b^4 + (3*a^
2*c*f^(c/(a + b*x))*(a + b*x)*Log[f])/(2*b^4) - (a*c*f^(c/(a + b*
x))*(a + b*x)^2*Log[f])/(2*b^4) + (a^3*c*ExpIntegralEi[(c*Log[f])
/(a + b*x)]*Log[f])/b^4 - (a*c^2*f^(c/(a + b*x))*(a + b*x)*Log[f]
^2)/(2*b^4) - (3*a^2*c^2*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[
f]^2)/(2*b^4) + (a*c^3*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]
^3)/(2*b^4) + (c^4*Gamma[-4, -((c*Log[f])/(a + b*x))]*Log[f]^4)/b
^4
```

Rubi in Sympy [A] time = 48.7335, size = 258, normalized size = 0.96

$$\frac{a^3c\log(f)\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b^4}-\frac{a^3f^{\frac{c}{a+bx}}(a+bx)}{b^4}-\frac{3a^2c^2\log(f)^2\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{2b^4}+\frac{3a^2cf^{\frac{c}{a+bx}}(a+bx)\log(f)}{2b^4}+\frac{3a^2f^{\frac{c}{a+bx}}(a+bx)^2}{2b^4}+\frac{ac^3\log(f)^3\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{2b^4}-\frac{ac^2f^{\frac{c}{a+bx}}(a+bx)\log(f)^2}{2b^4}-\frac{acf^{\frac{c}{a+bx}}(a+bx)^2\log(f)}{2b^4}-\frac{af^{\frac{c}{a+bx}}(a+bx)^3}{b^4}+\frac{c^4\left(-4,-\frac{c\log(f)}{a+bx}\right)\log(f)^4}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))*x**3,x)
```

```
[Out] a**3*c*log(f)*Ei(c*log(f)/(a + b*x))/b**4 - a**3*f**(c/(a + b*x))
*(a + b*x)/b**4 - 3*a**2*c**2*log(f)**2*Ei(c*log(f)/(a + b*x))/(2
*b**4) + 3*a**2*c*f**(c/(a + b*x))*(a + b*x)*log(f)/(2*b**4) + 3*
a**2*f**(c/(a + b*x))*(a + b*x)**2/(2*b**4) + a*c**3*log(f)**3*Ei
(c*log(f)/(a + b*x))/(2*b**4) - a*c**2*f**(c/(a + b*x))*(a + b*x)
*log(f)**2/(2*b**4) - a*c*f**(c/(a + b*x))*(a + b*x)**2*log(f)/(2
*b**4) - a*f**(c/(a + b*x))*(a + b*x)**3/b**4 + c**4*Gamma(-4, -c
*log(f)/(a + b*x))*log(f)**4/b**4
```

Mathematica [A] time = 0.177354, size = 179, normalized size = 0.67

$$\frac{bxf^{\frac{c}{a+bx}}\left(2c\log(f)\left(9a^2-3abx+b^2x^2\right)+c^2\log^2(f)(bx-10a)+6b^3x^3+c^3\log^3(f)\right)+c\log(f)\left(24a^3-36a^2c\log(f)+12a\right.}{24b^4}-\frac{a\left(6a^3-26a^2c\log(f)+11ac^2\log^2(f)-c^3\log^3(f)\right)f^{\frac{c}{a+bx}}}{24b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))*x^3,x]
```

```
[Out] -(a*f^(c/(a + b*x))*(6*a^3 - 26*a^2*c*Log[f] + 11*a*c^2*Log[f]^2
- c^3*Log[f]^3))/(24*b^4) + (c*ExpIntegralEi[(c*Log[f])/(a + b*x)
]*Log[f]*(24*a^3 - 36*a^2*c*Log[f] + 12*a*c^2*Log[f]^2 - c^3*Log[
f]^3) + b*f^(c/(a + b*x))*x*(6*b^3*x^3 + 2*c*(9*a^2 - 3*a*b*x + b
^2*x^2)*Log[f] + c^2*(-10*a + b*x)*Log[f]^2 + c^3*Log[f]^3))/(24*
b^4)
```

Maple [A] time = 0.04, size = 359, normalized size = 1.3

$$\frac{x^4}{4}f^{\frac{c}{bx+a}}+\frac{c^2(\ln(f))^2x^2}{24b^2}f^{\frac{c}{bx+a}}+\frac{(\ln(f))^3c^3x}{24b^3}f^{\frac{c}{bx+a}}-\frac{5(\ln(f))^2ac^2x}{12b^3}f^{\frac{c}{bx+a}}+\frac{13ca^3\ln(f)}{12b^4}f^{\frac{c}{bx+a}}-\frac{ca^3\ln(f)}{b^4}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)+\frac{c\ln(f)x^3}{12b}f^{\frac{c}{bx+a}}+\frac{(\ln(f))^4c^4}{24b^4}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)+\frac{3(\ln(f))^2a^2c^2}{2b^4}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)-\frac{(\ln(f))^3ac^3}{2b^4}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)-\frac{11(\ln(f))^2a^2c^2}{24b^4}f^{\frac{c}{bx+a}}+\frac{(\ln(f))^3ac^3}{24b^4}f^{\frac{c}{bx+a}}-\frac{a^4}{4b^4}f^{\frac{c}{bx+a}}-\frac{ac\ln(f)x^2}{4b^2}f^{\frac{c}{bx+a}}+\frac{3a^2c\ln(f)x}{4b^3}f^{\frac{c}{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a))*x^3,x)
```

```
[Out] 1/4*f^(c/(b*x+a))*x^4+1/24*ln(f)^2*c^2/b^2*f^(c/(b*x+a))*x^2+1/24
*ln(f)^3*c^3/b^3*f^(c/(b*x+a))*x-5/12*ln(f)^2*c^2/b^3*f^(c/(b*x+a
))*a*x+13/12*ln(f)*c/b^4*f^(c/(b*x+a))*a^3-ln(f)*c/b^4*a^3*Ei(1,-
c*ln(f)/(b*x+a))+1/12*ln(f)*c/b*f^(c/(b*x+a))*x^3+1/24*ln(f)^4*c^
4/b^4*Ei(1,-c*ln(f)/(b*x+a))+3/2*ln(f)^2*c^2/b^4*a^2*Ei(1,-c*ln(f
)/(b*x+a))-1/2*ln(f)^3*c^3/b^4*a*Ei(1,-c*ln(f)/(b*x+a))-11/24*ln(
f)^2*c^2/b^4*f^(c/(b*x+a))*a^2+1/24*ln(f)^3*c^3/b^4*f^(c/(b*x+a))
*a-1/4/b^4*f^(c/(b*x+a))*a^4-1/4*ln(f)*c/b^2*f^(c/(b*x+a))*a*x^2+
3/4*ln(f)*c/b^3*f^(c/(b*x+a))*a^2*x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(6\,b^3x^4+2\,b^2cx^3\log\left(f\right)+\left(bc^2\log\left(f\right)^2-6\,abc\log\left(f\right)\right)x^2+\left(c^3\log\left(f\right)^3-10\,ac^2\log\left(f\right)^2+18\,a^2c\log\left(f\right)\right)x\right)f^{\frac{c}{bx+a}}}{24\,b^3}-\int\frac{\left(a^2c^3\log\left(f\right)^3-10\,a^3c^2\log\left(f\right)^2+18\,a^4c\log\left(f\right)-\left(bc^4\log\left(f\right)^4-12\,abc^3\log\left(f\right)^3+36\,a^2bc^2\log\left(f\right)^2-24\,a^3bc\log\left(f\right)\right)\right.}{24\,\left(b^5x^2+2\,ab^4x+a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x^3,x, algorithm="maxima")
```

```
[Out] 1/24*(6*b^3*x^4 + 2*b^2*c*x^3*log(f) + (b*c^2*log(f)^2 - 6*a*b*c*
log(f))*x^2 + (c^3*log(f)^3 - 10*a*c^2*log(f)^2 + 18*a^2*c*log(f)
)*x)*f^(c/(b*x + a))/b^3 - integrate(1/24*(a^2*c^3*log(f)^3 - 10*
a^3*c^2*log(f)^2 + 18*a^4*c*log(f) - (b*c^4*log(f)^4 - 12*a*b*c^3
*log(f)^3 + 36*a^2*b*c^2*log(f)^2 - 24*a^3*b*c*log(f))*x)*f^(c/(b
*x + a))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3), x)
```

Fricas [A] time = 0.278902, size = 231, normalized size = 0.86

$$\frac{\left(6\,b^4x^4-6\,a^4+\left(bc^3x+ac^3\right)\log\left(f\right)^3+\left(b^2c^2x^2-10\,abc^2x-11\,a^2c^2\right)\log\left(f\right)^2+2\,\left(b^3cx^3-3\,ab^2cx^2+9\,a^2bcx+13\,a^3c\right)\log\ldots}{24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x^3,x, algorithm="fricas")
```

```
[Out] 1/24*((6*b^4*x^4 - 6*a^4 + (b*c^3*x + a*c^3)*log(f)^3 + (b^2*c^2*
x^2 - 10*a*b*c^2*x - 11*a^2*c^2)*log(f)^2 + 2*(b^3*c*x^3 - 3*a*b^
2*c*x^2 + 9*a^2*b*c*x + 13*a^3*c)*log(f))*f^(c/(b*x + a)) - (c^4*
log(f)^4 - 12*a*c^3*log(f)^3 + 36*a^2*c^2*log(f)^2 - 24*a^3*c*log
(f))*Ei(c*log(f)/(b*x + a)))/b^4
```

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

$$\int f^{\frac{c}{a+bx}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))*x**3,x)
```

```
[Out] Integral(f**(c/(a + b*x))*x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}} x^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(c/(b*x + a))*x^3, x)
```

3.218 $\int f^{\frac{c}{a+bx}}x^2\,dx$

Optimal. Leaf size=229

$$-\frac{a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^3}+\frac{a^2(a+bx)f^{\frac{c}{a+bx}}}{b^3}-\frac{c^3\log^3(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{6b^3}+\frac{ac^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^3}+\frac{c^2\log^2(f)(a+bx)f^{\frac{c}{a+bx}}}{6b^3}+\frac{(a+bx)^3f^{\frac{c}{a+bx}}}{3b^3}-\frac{a(a+bx)^2f^{\frac{c}{a+bx}}}{b^3}+\frac{c\log(f)(a+bx)^2f^{\frac{c}{a+bx}}}{6b^3}-\frac{ac\log(f)(a+bx)f^{\frac{c}{a+bx}}}{b^3}$$

```
[Out] (a^2*f^(c/(a + b*x))*(a + b*x))/b^3 - (a*f^(c/(a + b*x))*(a + b*x
)^2)/b^3 + (f^(c/(a + b*x))*(a + b*x)^3)/(3*b^3) - (a*c*f^(c/(a +
 b*x))*(a + b*x)*Log[f])/b^3 + (c*f^(c/(a + b*x))*(a + b*x)^2*Log
[f])/(6*b^3) - (a^2*c*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f])
/b^3 + (c^2*f^(c/(a + b*x))*(a + b*x)*Log[f]^2)/(6*b^3) + (a*c^2*
ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]^2)/b^3 - (c^3*ExpInteg
ralEi[(c*Log[f])/(a + b*x)]*Log[f]^3)/(6*b^3)
```

Rubi [A] time = 0.374397, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^3}+\frac{a^2(a+bx)f^{\frac{c}{a+bx}}}{b^3}-\frac{c^3\log^3(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{6b^3}+\frac{ac^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b^3}+\frac{c^2\log^2(f)(a+bx)f^{\frac{c}{a+bx}}}{6b^3}+\frac{(a+bx)^3f^{\frac{c}{a+bx}}}{3b^3}-\frac{a(a+bx)^2f^{\frac{c}{a+bx}}}{b^3}+\frac{c\log(f)(a+bx)^2f^{\frac{c}{a+bx}}}{6b^3}-\frac{ac\log(f)(a+bx)f^{\frac{c}{a+bx}}}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))*x^2,x]
```

```
[Out] (a^2*f^(c/(a + b*x))*(a + b*x))/b^3 - (a*f^(c/(a + b*x))*(a + b*x
)^2)/b^3 + (f^(c/(a + b*x))*(a + b*x)^3)/(3*b^3) - (a*c*f^(c/(a +
 b*x))*(a + b*x)*Log[f])/b^3 + (c*f^(c/(a + b*x))*(a + b*x)^2*Log
[f])/(6*b^3) - (a^2*c*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f])
/b^3 + (c^2*f^(c/(a + b*x))*(a + b*x)*Log[f]^2)/(6*b^3) + (a*c^2*
ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]^2)/b^3 - (c^3*ExpInteg
ralEi[(c*Log[f])/(a + b*x)]*Log[f]^3)/(6*b^3)
```

Rubi in Sympy [A] time = 34.145, size = 211, normalized size = 0.92

$$-\frac{a^2c\log(f)\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b^3}+\frac{a^2f^{\frac{c}{a+bx}}(a+bx)}{b^3}+\frac{ac^2\log(f)^2\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b^3}-\frac{acf^{\frac{c}{a+bx}}(a+bx)\log(f)}{b^3}-\frac{af^{\frac{c}{a+bx}}(a+bx)^2}{b^3}-\frac{c^3\log(f)^3\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{6b^3}+\frac{c^2f^{\frac{c}{a+bx}}(a+bx)\log(f)^2}{6b^3}+\frac{cf^{\frac{c}{a+bx}}(a+bx)^2\log(f)}{6b^3}+\frac{f^{\frac{c}{a+bx}}(a+bx)^3}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))*x**2,x)
```

```
[Out] -a**2*c*log(f)*Ei(c*log(f)/(a + b*x))/b**3 + a**2*f**(c/(a + b*x)
)*(a + b*x)/b**3 + a*c**2*log(f)**2*Ei(c*log(f)/(a + b*x))/b**3 -
 a*c*f**(c/(a + b*x))*(a + b*x)*log(f)/b**3 - a*f**(c/(a + b*x))*
(a + b*x)**2/b**3 - c**3*log(f)**3*Ei(c*log(f)/(a + b*x))/(6*b**3
) + c**2*f**(c/(a + b*x))*(a + b*x)*log(f)**2/(6*b**3) + c*f**(c/
(a + b*x))*(a + b*x)**2*log(f)/(6*b**3) + f**(c/(a + b*x))*(a + b
*x)**3/(3*b**3)
```

Mathematica [A] time = 0.123412, size = 128, normalized size = 0.56

$$\frac{a\left(2a^2-5ac\log(f)+c^2\log^2(f)\right)f^{\frac{c}{a+bx}}}{6b^3}+\frac{bxf^{\frac{c}{a+bx}}\left(\log(f)(bcx-4ac)+2b^2x^2+c^2\log^2(f)\right)-c\log(f)\left(6a^2-6ac\log(f)+c^2\log^2(f)\right)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{6b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))*x^2,x]
```

```
[Out] (a*f^(c/(a + b*x))*(2*a^2 - 5*a*c*Log[f] + c^2*Log[f]^2))/(6*b^3)
 + (-(c*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f]*(6*a^2 - 6*a*c
*Log[f] + c^2*Log[f]^2)) + b*f^(c/(a + b*x))*x*(2*b^2*x^2 + (-4*a
*c + b*c*x)*Log[f] + c^2*Log[f]^2))/(6*b^3)
```

Maple [A] time = 0.034, size = 227, normalized size = 1.

$$\frac{a^3}{3\,b^3}f^{\frac{c}{bx+a}}+\frac{a^2c\ln(f)}{b^3}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)+\frac{x^3}{3}f^{\frac{c}{bx+a}}+\frac{c\ln(f)\,x^2}{6\,b}f^{\frac{c}{bx+a}}-\frac{2\,ac\ln(f)\,x}{3\,b^2}f^{\frac{c}{bx+a}}-\frac{5\,a^2c\ln(f)}{6\,b^3}f^{\frac{c}{bx+a}}+\frac{c^2\left(\ln(f)\right)^2x}{6\,b^2}f^{\frac{c}{bx+a}}+\frac{\left(\ln(f)\right)^2ac^2}{6\,b^3}f^{\frac{c}{bx+a}}+\frac{\left(\ln(f)\right)^3c^3}{6\,b^3}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)-\frac{\left(\ln(f)\right)^2ac^2}{b^3}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a))*x^2,x)
```

```
[Out] 1/3/b^3*a^3*f^(c/(b*x+a))+ln(f)*c/b^3*a^2*Ei(1,-c*ln(f)/(b*x+a))+
1/3*f^(c/(b*x+a))*x^3+1/6*ln(f)*c/b*f^(c/(b*x+a))*x^2-2/3*ln(f)*c
/b^2*f^(c/(b*x+a))*a*x-5/6*ln(f)*c/b^3*f^(c/(b*x+a))*a^2+1/6*ln(f
)^2*c^2/b^2*f^(c/(b*x+a))*x+1/6*ln(f)^2*c^2/b^3*f^(c/(b*x+a))*a+1
/6*ln(f)^3*c^3/b^3*Ei(1,-c*ln(f)/(b*x+a))-ln(f)^2*c^2/b^3*a*Ei(1,
-c*ln(f)/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(2\,b^2x^3+bcx^2\log(f)+\left(c^2\log(f)^2-4\,ac\log(f)\right)x\right)f^{\frac{c}{bx+a}}}{6\,b^2}+\int-\frac{\left(a^2c^2\log(f)^2-4\,a^3c\log(f)-\left(bc^3\log(f)^3-6\,abc^2\log(f)^2+6\,a^2bc\log(f)\right)x\right)f^{\frac{c}{bx+a}}}{6\left(b^4x^2+2\,ab^3x+a^2b^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(2*b^2*x^3 + b*c*x^2*log(f) + (c^2*log(f)^2 - 4*a*c*log(f))*x
)*f^(c/(b*x + a))/b^2 + integrate(-1/6*(a^2*c^2*log(f)^2 - 4*a^3*
c*log(f) - (b*c^3*log(f)^3 - 6*a*b*c^2*log(f)^2 + 6*a^2*b*c*log(f
))*x)*f^(c/(b*x + a))/(b^4*x^2 + 2*a*b^3*x + a^2*b^2), x)
```

Fricas [A] time = 0.254768, size = 154, normalized size = 0.67

$$\frac{\left(2\,b^3x^3+2\,a^3+\left(bc^2x+ac^2\right)\log\left(f\right)^2+\left(b^2cx^2-4\,abcx-5\,a^2c\right)\log\left(f\right)\right)f^{\frac{c}{bx+a}}-\left(c^3\log\left(f\right)^3-6\,ac^2\log\left(f\right)^2+6\,a^2c\log\left(f\right.\right.}{6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*((2*b^3*x^3 + 2*a^3 + (b*c^2*x + a*c^2)*log(f)^2 + (b^2*c*x^2
 - 4*a*b*c*x - 5*a^2*c)*log(f))*f^(c/(b*x + a)) - (c^3*log(f)^3 -
 6*a*c^2*log(f)^2 + 6*a^2*c*log(f))*Ei(c*log(f)/(b*x + a)))/b^3
```

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

$$\int f^{\frac{c}{a+bx}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))*x**2,x)
```

```
[Out] Integral(f**(c/(a + b*x))*x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a))*x^2, x)
```

3.219 $\int f^{\frac{c}{a+bx}} x \, dx$

Optimal. Leaf size=120

$$-\frac{c^2 \log^2(f)\text{ExpIntegralEi}\left(\frac{c \log(f)}{a+bx}\right)}{2b^2}+\frac{ac \log(f)\text{ExpIntegralEi}\left(\frac{c \log(f)}{a+bx}\right)}{b^2}+\frac{(a+bx)^2 f^{\frac{c}{a+bx}}}{2b^2}-\frac{a(a+bx)f^{\frac{c}{a+bx}}}{b^2}+\frac{c \log(f)(a+bx)f^{\frac{c}{a+bx}}}{2b^2}$$

```
[Out] -((a*f^(c/(a + b*x))*(a + b*x))/b^2) + (f^(c/(a + b*x))*(a + b*x)
^2)/(2*b^2) + (c*f^(c/(a + b*x))*(a + b*x)*Log[f])/(2*b^2) + (a*c
*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f])/b^2 - (c^2*ExpIntegr
alEi[(c*Log[f])/(a + b*x)]*Log[f]^2)/(2*b^2)
```

Rubi [A] time = 0.19117, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{c^2 \log^2(f)\text{ExpIntegralEi}\left(\frac{c \log(f)}{a+bx}\right)}{2b^2}+\frac{ac \log(f)\text{ExpIntegralEi}\left(\frac{c \log(f)}{a+bx}\right)}{b^2}+\frac{(a+bx)^2 f^{\frac{c}{a+bx}}}{2b^2}-\frac{a(a+bx)f^{\frac{c}{a+bx}}}{b^2}+\frac{c \log(f)(a+bx)f^{\frac{c}{a+bx}}}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))*x,x]
```

```
[Out] -((a*f^(c/(a + b*x))*(a + b*x))/b^2) + (f^(c/(a + b*x))*(a + b*x)
^2)/(2*b^2) + (c*f^(c/(a + b*x))*(a + b*x)*Log[f])/(2*b^2) + (a*c
*ExpIntegralEi[(c*Log[f])/(a + b*x)]*Log[f])/b^2 - (c^2*ExpIntegr
alEi[(c*Log[f])/(a + b*x)]*Log[f]^2)/(2*b^2)
```

Rubi in Sympy [A] time = 15.992, size = 109, normalized size = 0.91

$$\frac{ac \log(f) \operatorname{Ei}\left(\frac{c \log(f)}{a+bx}\right)}{b^2}-\frac{af^{\frac{c}{a+bx}}(a+bx)}{b^2}-\frac{c^2 \log(f)^2 \operatorname{Ei}\left(\frac{c \log(f)}{a+bx}\right)}{2b^2}+\frac{cf^{\frac{c}{a+bx}}(a+bx)\log(f)}{2b^2}+\frac{f^{\frac{c}{a+bx}}(a+bx)^2}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))*x,x)
```

```
[Out] a*c*log(f)*Ei(c*log(f)/(a + b*x))/b**2 - a*f**(c/(a + b*x))*(a +
b*x)/b**2 - c**2*log(f)**2*Ei(c*log(f)/(a + b*x))/(2*b**2) + c*f*
*(c/(a + b*x))*(a + b*x)*log(f)/(2*b**2) + f**(c/(a + b*x))*(a +
b*x)**2/(2*b**2)
```

Mathematica [A] time = 0.0764587, size = 82, normalized size = 0.68

$$\frac{c \log(f)(2a-c\log(f))\text{ExpIntegralEi}\left(\frac{c \log(f)}{a+bx}\right)+bxf^{\frac{c}{a+bx}}(bx+c\log(f))}{2b^2}-\frac{a(a-c\log(f))f^{\frac{c}{a+bx}}}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))*x,x]
```

```
[Out] -(a*f^(c/(a + b*x))*(a - c*Log[f]))/(2*b^2) + (c*ExpIntegralEi[(c
*Log[f])/(a + b*x)]*Log[f]*(2*a - c*Log[f]) + b*f^(c/(a + b*x))*x
*(b*x + c*Log[f]))/(2*b^2)
```

Maple [A] time = 0.03, size = 126, normalized size = 1.1

$$\frac{x^2}{2}f^{\frac{c}{bx+a}} - \frac{a^2}{2\,b^2}f^{\frac{c}{bx+a}} + \frac{c\ln(f)\,x}{2\,b}f^{\frac{c}{bx+a}} + \frac{ac\ln(f)}{2\,b^2}f^{\frac{c}{bx+a}} + \frac{c^2(\ln(f))^2}{2\,b^2}Ei\left(1, -\frac{c\ln(f)}{bx+a}\right) - \frac{ac\ln(f)}{b^2}Ei\left(1, -\frac{c\ln(f)}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a))*x,x)
```

```
[Out] 1/2*f^(c/(b*x+a))*x^2-1/2/b^2*f^(c/(b*x+a))*a^2+1/2*ln(f)*c/b*f^(
c/(b*x+a))*x+1/2*ln(f)*c/b^2*f^(c/(b*x+a))*a+1/2*ln(f)^2*c^2/b^2*
Ei(1,-c*ln(f)/(b*x+a))-ln(f)*c/b^2*a*Ei(1,-c*ln(f)/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(bx^2 + cx\log(f)\right)f^{\frac{c}{bx+a}}}{2\,b} - \int \frac{\left(a^2c\log(f) - \left(bc^2\log(f)^2 - 2\,abc\log(f)\right)x\right)f^{\frac{c}{bx+a}}}{2\left(b^3x^2 + 2\,ab^2x + a^2b\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x,x, algorithm="maxima")
```

```
[Out] 1/2*(b*x^2 + c*x*log(f))*f^(c/(b*x + a))/b - integrate(1/2*(a^2*c
*log(f) - (b*c^2*log(f)^2 - 2*a*b*c*log(f))*x)*f^(c/(b*x + a))/(b
^3*x^2 + 2*a*b^2*x + a^2*b), x)
```

Fricas [A] time = 0.269991, size = 96, normalized size = 0.8

$$\frac{\left(b^2x^2 - a^2 + (bcx + ac)\log(f)\right)f^{\frac{c}{bx+a}} - \left(c^2\log(f)^2 - 2\,ac\log(f)\right)\mathrm{Ei}\left(\frac{c\log(f)}{bx+a}\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x,x, algorithm="fricas")
```

```
[Out] 1/2*((b^2*x^2 - a^2 + (b*c*x + a*c)*log(f))*f^(c/(b*x + a)) - (c^
2*log(f)^2 - 2*a*c*log(f))*Ei(c*log(f)/(b*x + a)))/b^2
```

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

$$\int f^{\frac{c}{a+bx}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))*x,x)
```

```
[Out] Integral(f**(c/(a + b*x))*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x,x, algorithm="giac")
```

```
[Out] integrate(f^(c/(b*x + a))*x, x)
```

3.220 $\int f^{\frac{c}{a+bx}}\,dx$

Optimal. Leaf size=41

$$\frac{(a+bx)f^{\frac{c}{a+bx}}}{b}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b}$$

```
[Out] (f^(c/(a + b*x))*(a + b*x))/b - (c*ExpIntegralEi[(c*Log[f])/(a +
b*x)]*Log[f])/b
```

Rubi [A] time = 0.0505333, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{(a+bx)f^{\frac{c}{a+bx}}}{b}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)),x]
```

```
[Out] (f^(c/(a + b*x))*(a + b*x))/b - (c*ExpIntegralEi[(c*Log[f])/(a +
b*x)]*Log[f])/b
```

Rubi in Sympy [A] time = 5.45494, size = 32, normalized size = 0.78

$$-\frac{c\log(f)\operatorname{Ei}\left(\frac{c\log(f)}{a+bx}\right)}{b}+\frac{f^{\frac{c}{a+bx}}(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)),x)
```

```
[Out] -c*log(f)*Ei(c*log(f)/(a + b*x))/b + f**(c/(a + b*x))*(a + b*x)/b
```

Mathematica [A] time = 0.0152264, size = 41, normalized size = 1.

$$\frac{(a+bx)f^{\frac{c}{a+bx}}}{b}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)),x]
```

```
[Out] (f^(c/(a + b*x))*(a + b*x))/b - (c*ExpIntegralEi[(c*Log[f])/(a +
b*x)]*Log[f])/b
```

Maple [A] time = 0.021, size = 52, normalized size = 1.3

$$f^{\frac{c}{bx+a}}x+\frac{a}{b}f^{\frac{c}{bx+a}}+\frac{c\ln(f)}{b}Ei\left(1,-\frac{c\ln(f)}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(c/(b*x+a)),x)
```

```
[Out] f^(c/(b*x+a))*x+1/b*f^(c/(b*x+a))*a+c*ln(f)/b*Ei(1,-c*ln(f)/(b*x+
a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$bc\int \frac{f^{\frac{c}{bx+a}}x}{b^2x^2+2\,abx+a^2}\,dx\log(f)+f^{\frac{c}{bx+a}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c/(b*x + a)),x, algorithm="maxima")
```

```
[Out] b*c*integrate(f^(c/(b*x + a))*x/(b^2*x^2 + 2*a*b*x + a^2), x)*log
(f) + f^(c/(b*x + a))*x
```

Fricas [A] time = 0.258401, size = 54, normalized size = 1.32

$$-\frac{c\mathrm{Ei}\left(\frac{c\log(f)}{bx+a}\right)\log(f)-(bx+a)f^{\frac{c}{bx+a}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c/(b*x + a)),x, algorithm="fricas")
```

```
[Out] -(c*Ei(c*log(f)/(b*x + a))*log(f) - (b*x + a)*f^(c/(b*x + a)))/b
```

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

$$\int f^{\frac{c}{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(c/(b*x+a)),x)
```

```
[Out] Integral(f**(c/(a + b*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c/(b*x + a)),x, algorithm="giac")
```

```
[Out] integrate(f^(c/(b*x + a)), x)
```

3.221 $\int \frac{f^{\frac{c}{a+bx}}}{x}\,dx$

Optimal. Leaf size=41

$$f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)-\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)$$

```
[Out] -ExpIntegralEi[(c*Log[f])/(a + b*x)] + f^(c/a)*ExpIntegralEi[-((b
*c*x*Log[f])/(a*(a + b*x)))]
```

Rubi [A] time = 0.204414, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)-\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))/x,x]
```

```
[Out] -ExpIntegralEi[(c*Log[f])/(a + b*x)] + f^(c/a)*ExpIntegralEi[-((b
*c*x*Log[f])/(a*(a + b*x)))]
```

Rubi in Sympy [A] time = 18.5461, size = 34, normalized size = 0.83

$$f^{\frac{c}{a}}\operatorname{Ei}\left(-\frac{bcx\log\left(f\right)}{a\left(a+bx\right)}\right)-\operatorname{Ei}\left(\frac{c\log\left(f\right)}{a+bx}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))/x,x)
```

```
[Out] f**(c/a)*Ei(-b*c*x*log(f)/(a*(a + b*x))) - Ei(c*log(f)/(a + b*x))
```

Mathematica [A] time = 0.0188304, size = 41, normalized size = 1.

$$f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a^2+abx}\right)-\text{ExpIntegralEi}\left(\frac{c\log(f)}{a+bx}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))/x,x]
```

```
[Out] -ExpIntegralEi[(c*Log[f])/(a + b*x)] + f^(c/a)*ExpIntegralEi[-((b
*c*x*Log[f])/(a^2 + a*b*x))]
```

Maple [A] time = 0.027, size = 47, normalized size = 1.2

$$-f^{\frac{c}{a}}Ei\left(1,-\frac{c\ln\left(f\right)}{bx+a}+\frac{c\ln\left(f\right)}{a}\right)+Ei\left(1,-\frac{c\ln\left(f\right)}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(c/(b*x+a))/x,x)

[Out] -f^(c/a)*Ei(1,-c*ln(f)/(b*x+a)+c*ln(f)/a)+Ei(1,-c*ln(f)/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{bx+a}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c/(b*x + a))/x,x, algorithm="maxima")

[Out] integrate(f^(c/(b*x + a))/x, x)
```

Fricas [A] time = 0.261513, size = 55, normalized size = 1.34

$$f^{\frac{c}{a}}\,\mathrm{Ei}\left(-\frac{bcx\log(f)}{abx+a^2}\right) - \mathrm{Ei}\left(\frac{c\log(f)}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c/(b*x + a))/x,x, algorithm="fricas")

[Out] f^(c/a)*Ei(-b*c*x*log(f)/(a*b*x + a^2)) - Ei(c*log(f)/(b*x + a))
```

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

$$\int \frac{f^{\frac{c}{a+bx}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(c/(b*x+a))/x,x)

[Out] Integral(f**(c/(a + b*x))/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{bx+a}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c/(b*x + a))/x,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a))/x, x)
```

3.222 $\int \frac{f^{\frac{c}{a+bx}}}{x^2} \, dx$

Optimal. Leaf size=68

$$-\frac{bc\log(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)}{a^2}-\frac{bf^{\frac{c}{a+bx}}}{a}-\frac{f^{\frac{c}{a+bx}}}{x}$$

```
[Out] -((b*f^(c/(a + b*x)))/a) - f^(c/(a + b*x))/x - (b*c*f^(c/a)*ExpIn
tegralEi[-((b*c*x*Log[f])/(a*(a + b*x)))]*Log[f])/a^2
```

Rubi [A] time = 0.636027, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.467

$$-\frac{bc\log(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)}{a^2}-\frac{bf^{\frac{c}{a+bx}}}{a}-\frac{f^{\frac{c}{a+bx}}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))/x^2,x]
```

```
[Out] -((b*f^(c/(a + b*x)))/a) - f^(c/(a + b*x))/x - (b*c*f^(c/a)*ExpIn
tegralEi[-((b*c*x*Log[f])/(a*(a + b*x)))]*Log[f])/a^2
```

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

$$-bc\log(f)\int \frac{f^{\frac{c}{a+bx}}}{x(a+bx)^2}\,dx-\frac{f^{\frac{c}{a+bx}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))/x**2,x)
```

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

Mathematica [A] time = 0.0897092, size = 68, normalized size = 1.

$$-\frac{bc\log(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a^2+abx}\right)}{a^2}-\frac{bf^{\frac{c}{a+bx}}}{a}-\frac{f^{\frac{c}{a+bx}}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))/x^2,x]
```

```
[Out] -((b*f^(c/(a + b*x)))/a) - f^(c/(a + b*x))/x - (b*c*f^(c/a)*ExpIn
tegralEi[-((b*c*x*Log[f])/(a^2 + a*b*x))]*Log[f])/a^2
```

Maple [A] time = 0.033, size = 80, normalized size = 1.2

$$\frac{c\ln(f)b}{a^2}f^{\frac{c}{bx+a}}\left(\frac{c\ln(f)}{bx+a}-\frac{c\ln(f)}{a}\right)^{-1}+\frac{c\ln(f)b}{a^2}f^{\frac{c}{a}}Ei\left(1,-\frac{c\ln(f)}{bx+a}+\frac{c\ln(f)}{a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a))/x^2,x)
```

```
[Out] 1/a^2*ln(f)*b*c*f^(c/(b*x+a))/(c*ln(f)/(b*x+a)-c*ln(f)/a)+1/a^2*l
n(f)*b*c*f^(c/a)*Ei(1,-c*ln(f)/(b*x+a)+c*ln(f)/a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{bx+a}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a))/x^2, x)
```

Fricas [A] time = 0.253831, size = 81, normalized size = 1.19

$$-\frac{bcf^{\frac{c}{a}}x\mathrm{Ei}\left(-\frac{bcx\log(f)}{abx+a^2}\right)\log(f)+\left(abx+a^2\right)f^{\frac{c}{bx+a}}}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b*c*f^(c/a)*x*Ei(-b*c*x*log(f)/(a*b*x + a^2))*log(f) + (a*b*x +
 a^2)*f^(c/(b*x + a)))/(a^2*x)
```

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

$$\int \frac{f^{\frac{c}{a+bx}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))/x**2,x)
```

```
[Out] Integral(f**(c/(a + b*x))/x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{bx+a}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a))/x^2, x)
```

3.223 $\int \frac{f^{\frac{c}{a+bx}}}{x^3}\,dx$

Optimal. Leaf size=166

$$\frac{b^2c^2\log^2(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)}{2a^4}+\frac{b^2c\log(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)}{a^3}+\frac{b^2c\log(f)f^{\frac{c}{a+bx}}}{2a^3}+\frac{b^2f^{\frac{c}{a+bx}}}{2a^2}+\frac{bc\log(f)f^{\frac{c}{a+bx}}}{2a^2x}-\frac{f^{\frac{c}{a+bx}}}{2x^2}$$

```
[Out] (b^2*f^(c/(a + b*x)))/(2*a^2) - f^(c/(a + b*x))/(2*x^2) + (b^2*c*
f^(c/(a + b*x))*Log[f])/(2*a^3) + (b*c*f^(c/(a + b*x))*Log[f])/(2
*a^2*x) + (b^2*c*f^(c/a)*ExpIntegralEi[-((b*c*x*Log[f])/(a*(a + b
*x)))]*Log[f])/a^3 + (b^2*c^2*f^(c/a)*ExpIntegralEi[-((b*c*x*Log[
f])/(a*(a + b*x)))]*Log[f]^2)/(2*a^4)
```

Rubi [A] time = 1.21216, antiderivative size = 166, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.467

$$\frac{b^2c^2\log^2(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)}{2a^4}+\frac{b^2c\log(f)f^{\frac{c}{a}}\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a(a+bx)}\right)}{a^3}+\frac{b^2c\log(f)f^{\frac{c}{a+bx}}}{2a^3}+\frac{b^2f^{\frac{c}{a+bx}}}{2a^2}+\frac{bc\log(f)f^{\frac{c}{a+bx}}}{2a^2x}-\frac{f^{\frac{c}{a+bx}}}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x))/x^3,x]
```

```
[Out] (b^2*f^(c/(a + b*x)))/(2*a^2) - f^(c/(a + b*x))/(2*x^2) + (b^2*c*
f^(c/(a + b*x))*Log[f])/(2*a^3) + (b*c*f^(c/(a + b*x))*Log[f])/(2
*a^2*x) + (b^2*c*f^(c/a)*ExpIntegralEi[-((b*c*x*Log[f])/(a*(a + b
*x)))]*Log[f])/a^3 + (b^2*c^2*f^(c/a)*ExpIntegralEi[-((b*c*x*Log[
f])/(a*(a + b*x)))]*Log[f]^2)/(2*a^4)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))/x**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.166781, size = 115, normalized size = 0.69

$$\frac{b^2(2a+c\log(f))f^{\frac{c}{a+bx}}}{2a^3}+\frac{b^2c\log(f)f^{\frac{c}{a}}(2a+c\log(f))\text{ExpIntegralEi}\left(-\frac{bcx\log(f)}{a^2+abx}\right)-\frac{a^2f^{\frac{c}{a+bx}}(a^2+b^2x^2-bcx\log(f))}{x^2}}{2a^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x))/x^3,x]
```

```
[Out] (b^2*f^(c/(a + b*x))*(2*a + c*Log[f]))/(2*a^3) + (b^2*c*f^(c/a)*E
xpIntegralEi[-((b*c*x*Log[f])/(a^2 + a*b*x))]*Log[f]*(2*a + c*Log
[f]) - (a^2*f^(c/(a + b*x))*(a^2 + b^2*x^2 - b*c*x*Log[f]))/x^2)/
(2*a^4)
```

Maple [A] time = 0.042, size = 226, normalized size = 1.4

$$-\frac{c^2b^2(\ln(f))^2}{2a^4}f^{\frac{c}{bx+a}}\left(\frac{c\ln(f)}{bx+a}-\frac{c\ln(f)}{a}\right)^{-2}-\frac{c^2b^2(\ln(f))^2}{2a^4}f^{\frac{c}{bx+a}}\left(\frac{c\ln(f)}{bx+a}-\frac{c\ln(f)}{a}\right)^{-1}$$
$$-\frac{c^2b^2(\ln(f))^2}{2a^4}f^{\frac{c}{a}}Ei\left(1,-\frac{c\ln(f)}{bx+a}+\frac{c\ln(f)}{a}\right)$$
$$-\frac{cb^2\ln(f)}{a^3}f^{\frac{c}{bx+a}}\left(\frac{c\ln(f)}{bx+a}-\frac{c\ln(f)}{a}\right)^{-1}-\frac{cb^2\ln(f)}{a^3}f^{\frac{c}{a}}Ei\left(1,-\frac{c\ln(f)}{bx+a}+\frac{c\ln(f)}{a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(c/(b*x+a))/x^3,x)
```

```
[Out] -1/2*c^2*b^2*ln(f)^2/a^4*f^(c/(b*x+a))/(c*ln(f)/(b*x+a)-c*ln(f)/a
)^2-1/2*c^2*b^2*ln(f)^2/a^4*f^(c/(b*x+a))/(c*ln(f)/(b*x+a)-c*ln(f
)/a)-1/2*c^2*b^2*ln(f)^2/a^4*f^(c/a)*Ei(1,-c*ln(f)/(b*x+a)+c*ln(f
)/a)-c*b^2*ln(f)/a^3*f^(c/(b*x+a))/(c*ln(f)/(b*x+a)-c*ln(f)/a)-c*
b^2*ln(f)/a^3*f^(c/a)*Ei(1,-c*ln(f)/(b*x+a)+c*ln(f)/a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{bx+a}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(c/(b*x + a))/x^3,x, algorithm="maxima")
```

```
[Out] integrate(f^(c/(b*x + a))/x^3, x)
```

Fricas [A] time = 0.27328, size = 149, normalized size = 0.9

$$\frac{\left(b^2c^2x^2\log(f)^2+2\,ab^2cx^2\log(f)\right)f^{\frac{c}{a}}\,\mathrm{Ei}\left(-\frac{bcx\log(f)}{abx+a^2}\right)+\left(a^2b^2x^2-a^4+\left(ab^2cx^2+a^2bcx\right)\log(f)\right)f^{\frac{c}{bx+a}}}{2\,a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(c/(b*x + a))/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*((b^2*c^2*x^2*log(f)^2 + 2*a*b^2*c*x^2*log(f))*f^(c/a)*Ei(-b*
c*x*log(f)/(a*b*x + a^2)) + (a^2*b^2*x^2 - a^4 + (a*b^2*c*x^2 + a
^2*b*c*x)*log(f))*f^(c/(b*x + a)))/(a^4*x^2)
```

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

$$\int \frac{f^{\frac{c}{a+bx}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))/x**3,x)

[Out] Integral(f**(c/(a + b*x))/x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{bx+a}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))/x^3,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a))/x^3, x)
```

3.224 $\int f^{\frac{c}{(a+bx)^2}} x^4 \, dx$

Optimal. Leaf size=415

$$-\frac{\sqrt{\pi}a^4\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^5}+\frac{a^4(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^5}+\frac{2a^3c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^5}-\frac{2a^3(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{b^5}-\frac{4\sqrt{\pi}a^2c^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^5}+\frac{2a^2(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{b^5}+\frac{4a^2c\log(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^5}-\frac{4\sqrt{\pi}c^{5/2}\log^{\frac{5}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{15b^5}+\frac{ac^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^5}+\frac{4c^2\log^2(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{15b^5}+\frac{(a+bx)^5f^{\frac{c}{(a+bx)^2}}}{5b^5}-\frac{a(a+bx)^4f^{\frac{c}{(a+bx)^2}}}{b^5}+\frac{2c\log(f)(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{15b^5}-\frac{ac\log(f)(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{b^5}$$

```
[Out] (a^4*f^(c/(a + b*x)^2)*(a + b*x))/b^5 - (2*a^3*f^(c/(a + b*x)^2)*
(a + b*x)^2)/b^5 + (2*a^2*f^(c/(a + b*x)^2)*(a + b*x)^3)/b^5 - (a
*f^(c/(a + b*x)^2)*(a + b*x)^4)/b^5 + (f^(c/(a + b*x)^2)*(a + b*x
)^5)/(5*b^5) - (a^4*Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/
(a + b*x)]*Sqrt[Log[f]])/b^5 + (4*a^2*c*f^(c/(a + b*x)^2)*(a + b*
x)*Log[f])/b^5 - (a*c*f^(c/(a + b*x)^2)*(a + b*x)^2*Log[f])/b^5 +
 (2*c*f^(c/(a + b*x)^2)*(a + b*x)^3*Log[f])/(15*b^5) + (2*a^3*c*E
xpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f])/b^5 - (4*a^2*c^(3/2)
*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Log[f]^(3/2))/b^
5 + (4*c^2*f^(c/(a + b*x)^2)*(a + b*x)*Log[f]^2)/(15*b^5) + (a*c^
2*ExpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f]^2)/b^5 - (4*c^(5/2
)*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Log[f]^(5/2))/(
15*b^5)
```

Rubi [A] time = 0.791376, antiderivative size = 415, normalized size of antiderivative = 1., number of steps used = 19, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.4

$$-\frac{\sqrt{\pi}a^4\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^5}+\frac{a^4(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^5}+\frac{2a^3c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^5}-\frac{2a^3(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{b^5}-\frac{4\sqrt{\pi}a^2c^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^5}+\frac{2a^2(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{b^5}+\frac{4a^2c\log(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^5}-\frac{4\sqrt{\pi}c^{5/2}\log^{\frac{5}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{15b^5}+\frac{ac^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^5}+\frac{4c^2\log^2(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{15b^5}+\frac{(a+bx)^5f^{\frac{c}{(a+bx)^2}}}{5b^5}-\frac{a(a+bx)^4f^{\frac{c}{(a+bx)^2}}}{b^5}+\frac{2c\log(f)(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{15b^5}-\frac{ac\log(f)(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{b^5}$$

Antiderivative was successfully verified.

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


```
[Out] (a^4*f^(c/(a + b*x)^2)*(a + b*x))/b^5 - (2*a^3*f^(c/(a + b*x)^2)*
(a + b*x)^2)/b^5 + (2*a^2*f^(c/(a + b*x)^2)*(a + b*x)^3)/b^5 - (a
*f^(c/(a + b*x)^2)*(a + b*x)^4)/b^5 + (f^(c/(a + b*x)^2)*(a + b*x
)^5)/(5*b^5) - (a^4*Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/
(a + b*x)]*Sqrt[Log[f]])/b^5 + (4*a^2*c*f^(c/(a + b*x)^2)*(a + b*
x)*Log[f])/b^5 - (a*c*f^(c/(a + b*x)^2)*(a + b*x)^2*Log[f])/b^5 +
```

```
(2*c*f^(c/(a + b*x)^2)*(a + b*x)^3*Log[f])/(15*b^5) + (2*a^3*c*E
xpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f])/b^5 - (4*a^2*c^(3/2)
*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Log[f]^(3/2))/b^
5 + (4*c^2*f^(c/(a + b*x)^2)*(a + b*x)*Log[f]^2)/(15*b^5) + (a*c^
2*ExpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f]^2)/b^5 - (4*c^(5/2
)*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Log[f]^(5/2))/(
15*b^5)
```

Rubi in Sympy [A] time = 68.0169, size = 415, normalized size = 1.

$$-\frac{\sqrt{\pi}a^4\sqrt{c}\sqrt{\log(f)}\operatorname{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^5}+\frac{a^4f^{\frac{c}{(a+bx)^2}}(a+bx)}{b^5}+\frac{2a^3c\log(f)\operatorname{Ei}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^5}-\frac{2a^3f^{\frac{c}{(a+bx)^2}}(a+bx)^2}{b^5}-\frac{4\sqrt{\pi}a^2c^{\frac{3}{2}}\log(f)^{\frac{3}{2}}\operatorname{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^5}+\frac{4a^2cf^{\frac{c}{(a+bx)^2}}(a+bx)\log(f)}{b^5}+\frac{2a^2f^{\frac{c}{(a+bx)^2}}(a+bx)^3}{b^5}+\frac{ac^2\log(f)^2\operatorname{Ei}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^5}-\frac{acf^{\frac{c}{(a+bx)^2}}(a+bx)^2\log(f)}{b^5}-\frac{af^{\frac{c}{(a+bx)^2}}(a+bx)^4}{b^5}-\frac{4\sqrt{\pi}c^{\frac{5}{2}}\log(f)^{\frac{5}{2}}\operatorname{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{15b^5}+\frac{4c^2f^{\frac{c}{(a+bx)^2}}(a+bx)\log(f)^2}{15b^5}+\frac{2cf^{\frac{c}{(a+bx)^2}}(a+bx)^3\log(f)}{15b^5}+\frac{f^{\frac{c}{(a+bx)^2}}(a+bx)^5}{5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -sqrt(pi)*a**4*sqrt(c)*sqrt(log(f))*erfi(sqrt(c)*sqrt(log(f))/(a
+ b*x))/b**5 + a**4*f**(c/(a + b*x)**2)*(a + b*x)/b**5 + 2*a**3*c
*log(f)*Ei(c*log(f)/(a + b*x)**2)/b**5 - 2*a**3*f**(c/(a + b*x)**
2)*(a + b*x)**2/b**5 - 4*sqrt(pi)*a**2*c**(3/2)*log(f)**(3/2)*erf
i(sqrt(c)*sqrt(log(f))/(a + b*x))/b**5 + 4*a**2*c*f**(c/(a + b*x)
**2)*(a + b*x)*log(f)/b**5 + 2*a**2*f**(c/(a + b*x)**2)*(a + b*x)
**3/b**5 + a*c**2*log(f)**2*Ei(c*log(f)/(a + b*x)**2)/b**5 - a*c*
f**(c/(a + b*x)**2)*(a + b*x)**2*log(f)/b**5 - a*f**(c/(a + b*x)*
*2)*(a + b*x)**4/b**5 - 4*sqrt(pi)*c**(5/2)*log(f)**(5/2)*erfi(sq
rt(c)*sqrt(log(f))/(a + b*x))/(15*b**5) + 4*c**2*f**(c/(a + b*x)*
*2)*(a + b*x)*log(f)**2/(15*b**5) + 2*c*f**(c/(a + b*x)**2)*(a +
b*x)**3*log(f)/(15*b**5) + f**(c/(a + b*x)**2)*(a + b*x)**5/(5*b*
*5)
```

Mathematica [A] time = 0.242088, size = 195, normalized size = 0.47

$$\frac{a\left(3a^4+47a^2c\log(f)+4c^2\log^2(f)\right)f^{\frac{c}{(a+bx)^2}}}{15b^5}+\frac{bxf^{\frac{c}{(a+bx)^2}}\left(c\log(f)\left(36a^2-9abx+2b^2x^2\right)+3b^4x^4+4c^2\log^2(f)\right)+15ac\log(f)\left(2a^2+c\log(f)\right)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{15b^5}$$

Antiderivative was successfully verified.

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

```
[Out] (a*f^(c/(a + b*x)^2)*(3*a^4 + 47*a^2*c*Log[f] + 4*c^2*Log[f]^2))/
(15*b^5) + (15*a*c*ExpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f]*(
2*a^2 + c*Log[f]) - Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/
(a + b*x)]*Sqrt[Log[f]]*(15*a^4 + 60*a^2*c*Log[f] + 4*c^2*Log[f]^
2) + b*f^(c/(a + b*x)^2)*x*(3*b^4*x^4 + c*(36*a^2 - 9*a*b*x + 2*b
```

```
^2*x^2)*Log[f] + 4*c^2*Log[f]^2))/(15*b^5)
```

Maple [A] time = 0.097, size = 343, normalized size = 0.8

$$\frac{47\,ca^3\ln(f)}{15\,b^5}f^{\frac{c}{(bx+a)^2}}+\frac{4\,(\ln(f))^2\,ac^2}{15\,b^5}f^{\frac{c}{(bx+a)^2}}-\frac{a^4c\ln(f)\sqrt{\pi}}{b^5}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}-4\frac{(\ln(f))^2\,a^2c^2\sqrt{\pi}}{b^5\sqrt{-c\ln(f)}}Erf\left(\frac{\sqrt{-c\ln(f)}}{bx+a}\right)-\frac{3\,ac\ln(f)\,x^2}{5\,b^3}f^{\frac{c}{(bx+a)^2}}+\frac{12\,a^2c\ln(f)\,x}{5\,b^4}f^{\frac{c}{(bx+a)^2}}+\frac{x^5}{5}f^{\frac{c}{(bx+a)^2}}+\frac{a^5}{5\,b^5}f^{\frac{c}{(bx+a)^2}}-2\frac{ca^3\ln(f)}{b^5}Ei\left(1,-\frac{c\ln(f)}{(bx+a)^2}\right)-\frac{(\ln(f))^2\,ac^2}{b^5}Ei\left(1,-\frac{c\ln(f)}{(bx+a)^2}\right)+\frac{2\,c\ln(f)\,x^3}{15\,b^2}f^{\frac{c}{(bx+a)^2}}+\frac{4\,c^2\,(\ln(f))^2\,x}{15\,b^4}f^{\frac{c}{(bx+a)^2}}-\frac{4\,(\ln(f))^3\,c^3\sqrt{\pi}}{15\,b^5}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 47/15/b^5*c*ln(f)*f^(c/(b*x+a)^2)*a^3+4/15/b^5*c^2*ln(f)^2*f^(c/(
b*x+a)^2)*a-1/b^5*a^4*c*ln(f)*Pi^(1/2)/(-c*ln(f))^(1/2)*erf((-c*l
n(f))^(1/2)/(b*x+a))-4/b^5*a^2*c^2*ln(f)^2*Pi^(1/2)/(-c*ln(f))^(1
/2)*erf((-c*ln(f))^(1/2)/(b*x+a))-3/5/b^3*c*ln(f)*f^(c/(b*x+a)^2)
*a*x^2+12/5/b^4*c*ln(f)*f^(c/(b*x+a)^2)*a^2*x+1/5*f^(c/(b*x+a)^2)
*x^5+1/5/b^5*a^5*f^(c/(b*x+a)^2)-2/b^5*a^3*c*ln(f)*Ei(1,-c*ln(f)/
(b*x+a)^2)-1/b^5*a*c^2*ln(f)^2*Ei(1,-c*ln(f)/(b*x+a)^2)+2/15/b^2*
c*ln(f)*f^(c/(b*x+a)^2)*x^3+4/15/b^4*c^2*ln(f)^2*f^(c/(b*x+a)^2)*
x-4/15/b^5*c^3*ln(f)^3*Pi^(1/2)/(-c*ln(f))^(1/2)*erf((-c*ln(f))^(
1/2)/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(3\,b^4x^5+2\,b^2cx^3\log(f)-9\,abcx^2\log(f)+4\left(9\,a^2c\log(f)+c^2\log(f)^2\right)x\right)f^{\frac{c}{b^2x^2+2\,abx+a^2}}}{15\,b^4}-\int\frac{2\left(18\,a^5c\log(f)+2\,a^3c^2\log(f)^2+15\left(2\,a^3b^2c\log(f)+ab^2c^2\log(f)^2\right)x^2+\left(45\,a^4bc\log(f)-30\,a^2bc^2\log(f)^2-4\,bc^3\right.\right.}{15\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/15*(3*b^4*x^5 + 2*b^2*c*x^3*log(f) - 9*a*b*c*x^2*log(f) + 4*(9*
a^2*c*log(f) + c^2*log(f)^2)*x)*f^(c/(b^2*x^2 + 2*a*b*x + a^2))/b
^4 - integrate(2/15*(18*a^5*c*log(f) + 2*a^3*c^2*log(f)^2 + 15*(2
*a^3*b^2*c*log(f) + a*b^2*c^2*log(f)^2)*x^2 + (45*a^4*b*c*log(f)
- 30*a^2*b*c^2*log(f)^2 - 4*b*c^3*log(f)^3)*x)*f^(c/(b^2*x^2 + 2*
a*b*x + a^2))/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4), x)
```

Fricas [A] time = 0.274548, size = 306, normalized size = 0.74

$$-\frac{\sqrt{\pi}\left(15\,a^4c\log(f)+60\,a^2c^2\log(f)^2+4\,c^3\log(f)^3\right)\operatorname{erf}\left(\frac{b\sqrt{-\frac{c\log(f)}{b^2}}}{bx+a}\right)-\left(\left(3\,b^6x^5+3\,a^5b+4\left(b^2c^2x+abc^2\right)\log(f)^2+\left(2\,b^4\right.\right.\right.}{15\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/15*(sqrt(pi)*(15*a^4*c*log(f) + 60*a^2*c^2*log(f)^2 + 4*c^3*lo
g(f)^3)*erf(b*sqrt(-c*log(f)/b^2)/(b*x + a)) - ((3*b^6*x^5 + 3*a^
5*b + 4*(b^2*c^2*x + a*b*c^2)*log(f)^2 + (2*b^4*c*x^3 - 9*a*b^3*c
*x^2 + 36*a^2*b^2*c*x + 47*a^3*b*c)*log(f))*f^(c/(b^2*x^2 + 2*a*b
*x + a^2)) + 15*(2*a^3*b*c*log(f) + a*b*c^2*log(f)^2)*Ei(c*log(f)
/(b^2*x^2 + 2*a*b*x + a^2)))*sqrt(-c*log(f)/b^2))/(b^6*sqrt(-c*lo
g(f)/b^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}} x^4\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a)^2)*x^4, x)
```

3.225 $\int f^{\frac{c}{(a+bx)^2}} x^3\,dx$

Optimal. Leaf size=291

$$\frac{\sqrt{\pi}a^3\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^4}-\frac{a^3(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^4}-\frac{3a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^4}+\frac{3a^2(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{2b^4}+\frac{2\sqrt{\pi}ac^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^4}-\frac{c^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{4b^4}+\frac{(a+bx)^4f^{\frac{c}{(a+bx)^2}}}{4b^4}-\frac{a(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{b^4}+\frac{c\log(f)(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{4b^4}-\frac{2ac\log(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^4}$$

```
[Out] -((a^3*f^(c/(a + b*x)^2)*(a + b*x))/b^4) + (3*a^2*f^(c/(a + b*x)^
2)*(a + b*x)^2)/(2*b^4) - (a*f^(c/(a + b*x)^2)*(a + b*x)^3)/b^4 +
 (f^(c/(a + b*x)^2)*(a + b*x)^4)/(4*b^4) + (a^3*Sqrt[c]*Sqrt[Pi]*
Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]])/b^4 - (2*a*c
*f^(c/(a + b*x)^2)*(a + b*x)*Log[f])/b^4 + (c*f^(c/(a + b*x)^2)*(
a + b*x)^2*Log[f])/(4*b^4) - (3*a^2*c*ExpIntegralEi[(c*Log[f])/(a
 + b*x)^2]*Log[f])/(2*b^4) + (2*a*c^(3/2)*Sqrt[Pi]*Erfi[(Sqrt[c]*
Sqrt[Log[f]])/(a + b*x)]*Log[f]^(3/2))/b^4 - (c^2*ExpIntegralEi[(
c*Log[f])/(a + b*x)^2]*Log[f]^2)/(4*b^4)
```

Rubi [A] time = 0.527772, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.4$

$$\frac{\sqrt{\pi}a^3\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^4}-\frac{a^3(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^4}-\frac{3a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^4}+\frac{3a^2(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{2b^4}+\frac{2\sqrt{\pi}ac^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^4}-\frac{c^2\log^2(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{4b^4}+\frac{(a+bx)^4f^{\frac{c}{(a+bx)^2}}}{4b^4}-\frac{a(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{b^4}+\frac{c\log(f)(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{4b^4}-\frac{2ac\log(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^2)*x^3,x]
```

```
[Out] -((a^3*f^(c/(a + b*x)^2)*(a + b*x))/b^4) + (3*a^2*f^(c/(a + b*x)^
2)*(a + b*x)^2)/(2*b^4) - (a*f^(c/(a + b*x)^2)*(a + b*x)^3)/b^4 +
 (f^(c/(a + b*x)^2)*(a + b*x)^4)/(4*b^4) + (a^3*Sqrt[c]*Sqrt[Pi]*
Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]])/b^4 - (2*a*c
*f^(c/(a + b*x)^2)*(a + b*x)*Log[f])/b^4 + (c*f^(c/(a + b*x)^2)*(
a + b*x)^2*Log[f])/(4*b^4) - (3*a^2*c*ExpIntegralEi[(c*Log[f])/(a
 + b*x)^2]*Log[f])/(2*b^4) + (2*a*c^(3/2)*Sqrt[Pi]*Erfi[(Sqrt[c]*
Sqrt[Log[f]])/(a + b*x)]*Log[f]^(3/2))/b^4 - (c^2*ExpIntegralEi[(
c*Log[f])/(a + b*x)^2]*Log[f]^2)/(4*b^4)
```

Rubi in Sympy [A] time = 50.2721, size = 287, normalized size = 0.99

$$\frac{\sqrt{\pi}a^3\sqrt{c}\sqrt{\log(f)}\,\text{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^4}-\frac{a^3f^{\frac{c}{(a+bx)^2}}(a+bx)}{b^4}-\frac{3a^2c\log(f)\,\text{Ei}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^4}+\frac{3a^2f^{\frac{c}{(a+bx)^2}}(a+bx)^2}{2b^4}+\frac{2\sqrt{\pi}ac^{\frac{3}{2}}\log(f)^{\frac{3}{2}}\,\text{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^4}-\frac{2acf^{\frac{c}{(a+bx)^2}}(a+bx)\log(f)}{b^4}-\frac{af^{\frac{c}{(a+bx)^2}}(a+bx)^3}{b^4}-\frac{c^2\log(f)^2\,\text{Ei}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{4b^4}+\frac{cf^{\frac{c}{(a+bx)^2}}(a+bx)^2\log(f)}{4b^4}+\frac{f^{\frac{c}{(a+bx)^2}}(a+bx)^4}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)*x**3,x)
```

```
[Out] sqrt(pi)*a**3*sqrt(c)*sqrt(log(f))*erfi(sqrt(c)*sqrt(log(f))/(a +
 b*x))/b**4 - a**3*f**(c/(a + b*x)**2)*(a + b*x)/b**4 - 3*a**2*c*
log(f)*Ei(c*log(f)/(a + b*x)**2)/(2*b**4) + 3*a**2*f**(c/(a + b*x
)**2)*(a + b*x)**2/(2*b**4) + 2*sqrt(pi)*a*c**(3/2)*log(f)**(3/2)
*erfi(sqrt(c)*sqrt(log(f))/(a + b*x))/b**4 - 2*a*c*f**(c/(a + b*x
)**2)*(a + b*x)*log(f)/b**4 - a*f**(c/(a + b*x)**2)*(a + b*x)**3/
b**4 - c**2*log(f)**2*Ei(c*log(f)/(a + b*x)**2)/(4*b**4) + c*f**(
c/(a + b*x)**2)*(a + b*x)**2*log(f)/(4*b**4) + f**(c/(a + b*x)**2
)*(a + b*x)**4/(4*b**4)
```

Mathematica [A] time = 0.164696, size = 148, normalized size = 0.51

$$\frac{4\sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\left(a^2+2c\log(f)\right)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)-c\log(f)\left(6a^2+c\log(f)\right)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)+bxf^{\frac{c}{(a+bx)^2}}\left(-6ac\log\right.}{4b^4}$$

$$-\frac{a^2\left(a^2+7c\log(f)\right)f^{\frac{c}{(a+bx)^2}}}{4b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^2)*x^3,x]
```

```
[Out] -(a^2*f^(c/(a + b*x)^2)*(a^2 + 7*c*Log[f]))/(4*b^4) + (-(c*ExpInt
egralEi[(c*Log[f])/(a + b*x)^2]*Log[f]*(6*a^2 + c*Log[f])) + 4*a*
Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[
f]]*(a^2 + 2*c*Log[f]) + b*f^(c/(a + b*x)^2)*x*(b^3*x^3 - 6*a*c*L
og[f] + b*c*x*Log[f]))/(4*b^4)
```

Maple [A] time = 0.043, size = 228, normalized size = 0.8

$$\frac{x^4}{4}f^{\frac{c}{(bx+a)^2}}-\frac{a^4}{4\,b^4}f^{\frac{c}{(bx+a)^2}}+\frac{c\ln(f)\,x^2}{4\,b^2}f^{\frac{c}{(bx+a)^2}}-\frac{3\,ac\ln(f)\,x}{2\,b^3}f^{\frac{c}{(bx+a)^2}}-\frac{7\,a^2c\ln(f)}{4\,b^4}f^{\frac{c}{(bx+a)^2}}+\frac{c^2\left(\ln(f)\right)^2}{4\,b^4}Ei\left(1,-\frac{c\ln(f)}{(bx+a)^2}\right)+2\,\frac{\left(\ln(f)\right)^2ac^2\sqrt{\pi}}{b^4\sqrt{-c\ln(f)}}Erf\left(\frac{\sqrt{-c\ln(f)}}{bx+a}\right)+\frac{3\,a^2c\ln(f)}{2\,b^4}Ei\left(1,-\frac{c\ln(f)}{(bx+a)^2}\right)+\frac{ca^3\ln(f)\sqrt{\pi}}{b^4}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)*x^3,x)
```

```
[Out] 1/4*f^(c/(b*x+a)^2)*x^4-1/4/b^4*f^(c/(b*x+a)^2)*a^4+1/4/b^2*c*ln(
f)*f^(c/(b*x+a)^2)*x^2-3/2/b^3*c*ln(f)*f^(c/(b*x+a)^2)*a*x-7/4/b^
4*c*ln(f)*f^(c/(b*x+a)^2)*a^2+1/4/b^4*c^2*ln(f)^2*Ei(1,-c*ln(f)/(
b*x+a)^2)+2/b^4*a*c^2*ln(f)^2*Pi^(1/2)/(-c*ln(f))^(1/2)*erf((-c*l
n(f))^(1/2)/(b*x+a))+3/2/b^4*a^2*c*ln(f)*Ei(1,-c*ln(f)/(b*x+a)^2)
+1/b^4*a^3*c*ln(f)*Pi^(1/2)/(-c*ln(f))^(1/2)*erf((-c*ln(f))^(1/2)
/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^{3}x^{4}+bcx^{2}\log\left(f\right)-6\,acx\log\left(f\right)\right)f^{\frac{c}{b^{2}x^{2}+2\,abx+a^{2}}}}{4\,b^{3}}+\int\frac{\left(3\,a^{4}c\log\left(f\right)+\left(6\,a^{2}b^{2}c\log\left(f\right)+b^{2}c^{2}\log\left(f\right)^{2}\right)x^{2}+2\,\left(4\,a^{3}bc\log\left(f\right)-3\,abc^{2}\log\left(f\right)^{2}\right)x\right)f^{\frac{c}{b^{2}x^{2}+2\,abx+a^{2}}}}{2\,\left(b^{6}x^{3}+3\,ab^{5}x^{2}+3\,a^{2}b^{4}x+a^{3}b^{3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(b^3*x^4 + b*c*x^2*log(f) - 6*a*c*x*log(f))*f^(c/(b^2*x^2 + 2
*a*b*x + a^2))/b^3 + integrate(1/2*(3*a^4*c*log(f) + (6*a^2*b^2*c
*log(f) + b^2*c^2*log(f)^2)*x^2 + 2*(4*a^3*b*c*log(f) - 3*a*b*c^2
*log(f)^2)*x)*f^(c/(b^2*x^2 + 2*a*b*x + a^2))/(b^6*x^3 + 3*a*b^5*
x^2 + 3*a^2*b^4*x + a^3*b^3), x)
```

Fricas [A] time = 0.273185, size = 242, normalized size = 0.83

$$\frac{4\,\sqrt{\pi}\left(a^{3}c\log\left(f\right)+2\,ac^{2}\log\left(f\right)^{2}\right)\operatorname{erf}\left(\frac{b\sqrt{-\frac{c\log(f)}{b^{2}}}}{bx+a}\right)+\left(\left(b^{5}x^{4}-a^{4}b+\left(b^{3}cx^{2}-6\,ab^{2}cx-7\,a^{2}bc\right)\log\left(f\right)\right)f^{\frac{c}{b^{2}x^{2}+2\,abx+a^{2}}}-\left(6\,a\right.\right.}{4\,b^{5}\sqrt{-\frac{c\log(f)}{b^{2}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(4*sqrt(pi)*(a^3*c*log(f) + 2*a*c^2*log(f)^2)*erf(b*sqrt(-c*l
og(f)/b^2)/(b*x + a)) + ((b^5*x^4 - a^4*b + (b^3*c*x^2 - 6*a*b^2*
c*x - 7*a^2*b*c)*log(f))*f^(c/(b^2*x^2 + 2*a*b*x + a^2)) - (6*a^2
*b*c*log(f) + b*c^2*log(f)^2)*Ei(c*log(f)/(b^2*x^2 + 2*a*b*x + a^
2)))*sqrt(-c*log(f)/b^2))/(b^5*sqrt(-c*log(f)/b^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)*x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^{2}}}x^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a)^2)*x^3, x)
```

3.226 $\int f^{\frac{c}{(a+bx)^2}} x^2 \, dx$

Optimal. Leaf size=206

$$-\frac{\sqrt{\pi}a^2\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^3}+\frac{a^2(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^3}-\frac{2\sqrt{\pi}c^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{3b^3}+\frac{ac\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^3}+\frac{(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{3b^3}-\frac{a(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{b^3}+\frac{2c\log(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{3b^3}$$

```
[Out] (a^2*f^(c/(a + b*x)^2)*(a + b*x))/b^3 - (a*f^(c/(a + b*x)^2)*(a +
 b*x)^2)/b^3 + (f^(c/(a + b*x)^2)*(a + b*x)^3)/(3*b^3) - (a^2*Sqr
t[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]]
)/b^3 + (2*c*f^(c/(a + b*x)^2)*(a + b*x)*Log[f])/(3*b^3) + (a*c*E
xpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f])/b^3 - (2*c^(3/2)*Sqr
t[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Log[f]^(3/2))/(3*b^3
)
```

Rubi [A] time = 0.372813, antiderivative size = 206, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.4$

$$-\frac{\sqrt{\pi}a^2\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^3}+\frac{a^2(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^3}-\frac{2\sqrt{\pi}c^{3/2}\log^{\frac{3}{2}}(f)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{3b^3}+\frac{ac\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^3}+\frac{(a+bx)^3f^{\frac{c}{(a+bx)^2}}}{3b^3}-\frac{a(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{b^3}+\frac{2c\log(f)(a+bx)f^{\frac{c}{(a+bx)^2}}}{3b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^2)*x^2,x]
```

```
[Out] (a^2*f^(c/(a + b*x)^2)*(a + b*x))/b^3 - (a*f^(c/(a + b*x)^2)*(a +
 b*x)^2)/b^3 + (f^(c/(a + b*x)^2)*(a + b*x)^3)/(3*b^3) - (a^2*Sqr
t[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]]
)/b^3 + (2*c*f^(c/(a + b*x)^2)*(a + b*x)*Log[f])/(3*b^3) + (a*c*E
xpIntegralEi[(c*Log[f])/(a + b*x)^2]*Log[f])/b^3 - (2*c^(3/2)*Sqr
t[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Log[f]^(3/2))/(3*b^3
)
```

Rubi in Sympy [A] time = 35.2048, size = 201, normalized size = 0.98

$$-\frac{\sqrt{\pi}a^2\sqrt{c}\sqrt{\log(f)}\,\text{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^3}+\frac{a^2f^{\frac{c}{(a+bx)^2}}(a+bx)}{b^3}+\frac{ac\log(f)\,\text{Ei}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{b^3}-\frac{af^{\frac{c}{(a+bx)^2}}(a+bx)^2}{b^3}-\frac{2\sqrt{\pi}c^{\frac{3}{2}}\log(f)^{\frac{3}{2}}\,\text{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{3b^3}+\frac{2cf^{\frac{c}{(a+bx)^2}}(a+bx)\log(f)}{3b^3}+\frac{f^{\frac{c}{(a+bx)^2}}(a+bx)^3}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)*x**2,x)
```

```
[Out] -sqrt(pi)*a**2*sqrt(c)*sqrt(log(f))*erfi(sqrt(c)*sqrt(log(f))/(a
+ b*x))/b**3 + a**2*f**(c/(a + b*x)**2)*(a + b*x)/b**3 + a*c*log(
```

```
f)*Ei(c*log(f)/(a + b*x)**2)/b**3 - a*f**(c/(a + b*x)**2)*(a + b*
x)**2/b**3 - 2*sqrt(pi)*c**(3/2)*log(f)**(3/2)*erfi(sqrt(c)*sqrt(
log(f))/(a + b*x))/(3*b**3) + 2*c*f**(c/(a + b*x)**2)*(a + b*x)*l
og(f)/(3*b**3) + f**(c/(a + b*x)**2)*(a + b*x)**3/(3*b**3)
```

Mathematica [A] time = 0.121642, size = 131, normalized size = 0.64

$$\frac{a\left(a^2+2c\log(f)\right)f^{\frac{c}{(a+bx)^2}}}{3b^3}+\frac{-\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}\left(3a^2+2c\log(f)\right)\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)+bxf^{\frac{c}{(a+bx)^2}}\left(b^2x^2+2c\log(f)\right)+3ac\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{3b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^2)*x^2,x]
```

```
[Out] (a*f^(c/(a + b*x)^2)*(a^2 + 2*c*Log[f]))/(3*b^3) + (3*a*c*ExpInte
gralEi[(c*Log[f])/(a + b*x)^2]*Log[f] - Sqrt[c]*Sqrt[Pi]*Erfi[(Sq
rt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]]*(3*a^2 + 2*c*Log[f])
+ b*f^(c/(a + b*x)^2)*x*(b^2*x^2 + 2*c*Log[f]))/(3*b^3)
```

Maple [A] time = 0.039, size = 175, normalized size = 0.9

$$\frac{x^3}{3}f^{\frac{c}{(bx+a)^2}}+\frac{a^3}{3b^3}f^{\frac{c}{(bx+a)^2}}+\frac{2c\ln(f)x}{3b^2}f^{\frac{c}{(bx+a)^2}}+\frac{2ac\ln(f)}{3b^3}f^{\frac{c}{(bx+a)^2}}-\frac{2c^2(\ln(f))^2\sqrt{\pi}}{3b^3}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}-\frac{a^2c\ln(f)\sqrt{\pi}}{b^3}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}-\frac{ac\ln(f)}{b^3}Ei\left(1,-\frac{c\ln(f)}{(bx+a)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)*x^2,x)
```

```
[Out] 1/3*f^(c/(b*x+a)^2)*x^3+1/3/b^3*a^3*f^(c/(b*x+a)^2)+2/3/b^2*c*ln(
f)*f^(c/(b*x+a)^2)*x+2/3/b^3*c*ln(f)*f^(c/(b*x+a)^2)*a-2/3/b^3*c^
2*ln(f)^2*Pi^(1/2)/(-c*ln(f))^(1/2)*erf((-c*ln(f))^(1/2)/(b*x+a))
-1/b^3*a^2*c*ln(f)*Pi^(1/2)/(-c*ln(f))^(1/2)*erf((-c*ln(f))^(1/2)
/(b*x+a))-1/b^3*a*c*ln(f)*Ei(1,-c*ln(f)/(b*x+a)^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^2x^3+2\,cx\log(f)\right)f^{\frac{c}{b^2x^2+2\,abx+a^2}}}{3\,b^2}-\int\frac{2\left(3\,ab^2cx^2\log(f)+a^3c\log(f)+\left(3\,a^2bc\log(f)-2\,bc^2\log(f)^2\right)x\right)f^{\frac{c}{b^2x^2+2\,abx+a^2}}}{3\left(b^5x^3+3\,ab^4x^2+3\,a^2b^3x+a^3b^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(b^2*x^3 + 2*c*x*log(f))*f^(c/(b^2*x^2 + 2*a*b*x + a^2))/b^2
- integrate(2/3*(3*a*b^2*c*x^2*log(f) + a^3*c*log(f) + (3*a^2*b*c
*log(f) - 2*b*c^2*log(f)^2)*x)*f^(c/(b^2*x^2 + 2*a*b*x + a^2))/(b
```

```
^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2), x)
```

Fricas [A] time = 0.252103, size = 205, normalized size = 1.

$$-\frac{\sqrt{\pi}\left(3\,a^2c\log\left(f\right)+2\,c^2\log\left(f\right)^2\right)\operatorname{erf}\left(\frac{b\sqrt{-\frac{c\log(f)}{b^2}}}{bx+a}\right)-\left(3\,abc\operatorname{Ei}\left(\frac{c\log(f)}{b^2x^2+2\,abx+a^2}\right)\log\left(f\right)+\left(b^4x^3+a^3b+2\left(b^2cx+abc\right)\log\left(f\right)\right.\right.}{3\,b^4\sqrt{-\frac{c\log(f)}{b^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(sqrt(pi)*(3*a^2*c*log(f) + 2*c^2*log(f)^2)*erf(b*sqrt(-c*lo
g(f)/b^2)/(b*x + a)) - (3*a*b*c*Ei(c*log(f)/(b^2*x^2 + 2*a*b*x +
a^2))*log(f) + (b^4*x^3 + a^3*b + 2*(b^2*c*x + a*b*c)*log(f))*f^(
c/(b^2*x^2 + 2*a*b*x + a^2)))*sqrt(-c*log(f)/b^2))/(b^4*sqrt(-c*l
og(f)/b^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)*x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a)^2)*x^2, x)
```

3.227 $\int f^{\frac{c}{(a+bx)^2}} x\,dx$

Optimal. Leaf size=111

$$\frac{\sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^2}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^2}+\frac{(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{2b^2}-\frac{a(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^2}$$

```
[Out] -((a*f^(c/(a + b*x)^2)*(a + b*x))/b^2) + (f^(c/(a + b*x)^2)*(a +
b*x)^2)/(2*b^2) + (a*Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])
/(a + b*x)]*Sqrt[Log[f]])/b^2 - (c*ExpIntegralEi[(c*Log[f])/(a +
b*x)^2]*Log[f])/(2*b^2)
```

Rubi [A] time = 0.198994, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$\frac{\sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^2}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^2}+\frac{(a+bx)^2f^{\frac{c}{(a+bx)^2}}}{2b^2}-\frac{a(a+bx)f^{\frac{c}{(a+bx)^2}}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^2)*x,x]
```

```
[Out] -((a*f^(c/(a + b*x)^2)*(a + b*x))/b^2) + (f^(c/(a + b*x)^2)*(a +
b*x)^2)/(2*b^2) + (a*Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]*Sqrt[Log[f]])
/(a + b*x)]*Sqrt[Log[f]])/b^2 - (c*ExpIntegralEi[(c*Log[f])/(a +
b*x)^2]*Log[f])/(2*b^2)
```

Rubi in Sympy [A] time = 21.6343, size = 105, normalized size = 0.95

$$\frac{\sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\,\text{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b^2}-\frac{af^{\frac{c}{(a+bx)^2}}(a+bx)}{b^2}-\frac{c\log(f)\,\text{Ei}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^2}+\frac{f^{\frac{c}{(a+bx)^2}}(a+bx)^2}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)*x,x)
```

```
[Out] sqrt(pi)*a*sqrt(c)*sqrt(log(f))*erfi(sqrt(c)*sqrt(log(f))/(a + b*
x))/b**2 - a*f**(c/(a + b*x)**2)*(a + b*x)/b**2 - c*log(f)*Ei(c*l
og(f)/(a + b*x)**2)/(2*b**2) + f**(c/(a + b*x)**2)*(a + b*x)**2/(
2*b**2)
```

Mathematica [A] time = 0.049486, size = 89, normalized size = 0.8

$$\frac{\left(b^2x^2-a^2\right)f^{\frac{c}{(a+bx)^2}}+2\sqrt{\pi}a\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)-c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^2}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^2)*x,x]
```

```
[Out] (f^(c/(a + b*x)^2)*(-a^2 + b^2*x^2) + 2*a*Sqrt[c]*Sqrt[Pi]*Erfi[(
Sqrt[c]*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]] - c*ExpIntegralEi[(
c*Log[f])/(a + b*x)^2]*Log[f])/(2*b^2)
```

Maple [A] time = 0.031, size = 93, normalized size = 0.8

$$\frac{x^2}{2}f^{\frac{c}{(bx+a)^2}} - \frac{a^2}{2\,b^2}f^{\frac{c}{(bx+a)^2}} + \frac{c\ln(f)}{2\,b^2}Ei\left(1, -\frac{c\ln(f)}{(bx+a)^2}\right) + \frac{ac\ln(f)\sqrt{\pi}}{b^2}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)*x,x)
```

```
[Out] 1/2*f^(c/(b*x+a)^2)*x^2-1/2/b^2*f^(c/(b*x+a)^2)*a^2+1/2/b^2*c*ln(
f)*Ei(1,-c*ln(f)/(b*x+a)^2)+1/b^2*a*c*ln(f)*Pi^(1/2)/(-c*ln(f))^(
1/2)*erf((-c*ln(f))^(1/2)/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$bc\int\frac{f^{\frac{c}{b^2x^2+2\,abx+a^2}}x^2}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\,dx\log(f)+\frac{1}{2}\,f^{\frac{c}{b^2x^2+2\,abx+a^2}}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] b*c*integrate(f^(c/(b^2*x^2 + 2*a*b*x + a^2))*x^2/(b^3*x^3 + 3*a*
b^2*x^2 + 3*a^2*b*x + a^3), x)*log(f) + 1/2*f^(c/(b^2*x^2 + 2*a*b
*x + a^2))*x^2
```

Fricas [A] time = 0.32739, size = 167, normalized size = 1.5

$$\frac{2\sqrt{\pi}ac\,\mathrm{erf}\left(\frac{b\sqrt{-\frac{c\log(f)}{b^2}}}{bx+a}\right)\log(f)-\left(bc\mathrm{Ei}\left(\frac{c\log(f)}{b^2x^2+2\,abx+a^2}\right)\log(f)-\left(b^3x^2-a^2b\right)f^{\frac{c}{b^2x^2+2\,abx+a^2}}\right)\sqrt{-\frac{c\log(f)}{b^2}}}{2\,b^3\sqrt{-\frac{c\log(f)}{b^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*sqrt(pi)*a*c*erf(b*sqrt(-c*log(f)/b^2)/(b*x + a))*log(f) -
 (b*c*Ei(c*log(f)/(b^2*x^2 + 2*a*b*x + a^2))*log(f) - (b^3*x^2 -
a^2*b)*f^(c/(b^2*x^2 + 2*a*b*x + a^2)))*sqrt(-c*log(f)/b^2))/(b^3
*sqrt(-c*log(f)/b^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)*x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a)^2)*x, x)
```

3.228 $\int f^{\frac{c}{(a+bx)^2}}\,dx$

Optimal. Leaf size=62

$$\frac{(a+bx)f^{\frac{c}{(a+bx)^2}}}{b}-\frac{\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b}$$

```
[Out] (f^(c/(a + b*x)^2)*(a + b*x))/b - (Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]
*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]])/b
```

Rubi [A] time = 0.0745087, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\frac{(a+bx)f^{\frac{c}{(a+bx)^2}}}{b}-\frac{\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^2),x]
```

```
[Out] (f^(c/(a + b*x)^2)*(a + b*x))/b - (Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]
*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]])/b
```

Rubi in Sympy [A] time = 8.50836, size = 53, normalized size = 0.85

$$-\frac{\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}\,\text{erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b}+\frac{f^{\frac{c}{(a+bx)^2}}(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2),x)
```

```
[Out] -sqrt(pi)*sqrt(c)*sqrt(log(f))*erfi(sqrt(c)*sqrt(log(f))/(a + b*x
))/b + f**(c/(a + b*x)**2)*(a + b*x)/b
```

Mathematica [A] time = 0.0227393, size = 62, normalized size = 1.

$$\frac{(a+bx)f^{\frac{c}{(a+bx)^2}}}{b}-\frac{\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}\text{Erfi}\left(\frac{\sqrt{c}\sqrt{\log(f)}}{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^2),x]
```

```
[Out] (f^(c/(a + b*x)^2)*(a + b*x))/b - (Sqrt[c]*Sqrt[Pi]*Erfi[(Sqrt[c]
*Sqrt[Log[f]])/(a + b*x)]*Sqrt[Log[f]])/b
```

Maple [A] time = 0.029, size = 65, normalized size = 1.1

$$f^{\frac{c}{(bx+a)^2}}x+\frac{a}{b}f^{\frac{c}{(bx+a)^2}}-\frac{c\ln(f)\sqrt{\pi}}{b}Erf\left(\frac{1}{bx+a}\sqrt{-c\ln(f)}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2),x)
```

```
[Out] f^(c/(b*x+a)^2)*x+1/b*f^(c/(b*x+a)^2)*a-1/b*c*ln(f)*Pi^(1/2)/(-c*
ln(f))^(1/2)*erf((-c*ln(f))^(1/2)/(b*x+a))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,bc\int\frac{f^{\frac{c}{b^2x^2+2\,abx+a^2}}x}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\,dx\log(f)+f^{\frac{c}{b^2x^2+2\,abx+a^2}}x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*b*c*integrate(f^(c/(b^2*x^2 + 2*a*b*x + a^2))*x/(b^3*x^3 + 3*a*
b^2*x^2 + 3*a^2*b*x + a^3), x)*log(f) + f^(c/(b^2*x^2 + 2*a*b*x +
 a^2))*x
```

Fricas [A] time = 0.310337, size = 116, normalized size = 1.87

$$-\frac{\sqrt{\pi}c\,\mathrm{erf}\left(\frac{b\sqrt{-\frac{c\log(f)}{b^2}}}{bx+a}\right)\log(f)-\left(b^2x+ab\right)f^{\frac{c}{b^2x^2+2\,abx+a^2}}\sqrt{-\frac{c\log(f)}{b^2}}}{b^2\sqrt{-\frac{c\log(f)}{b^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(sqrt(pi)*c*erf(b*sqrt(-c*log(f)/b^2)/(b*x + a))*log(f) - (b^2*x
 + a*b)*f^(c/(b^2*x^2 + 2*a*b*x + a^2))*sqrt(-c*log(f)/b^2))/(b^2
*sqrt(-c*log(f)/b^2))
```

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

$$\int f^{\frac{c}{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2),x)
```

```
[Out] Integral(f**(c/(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a)^2), x)
```

3.229 $\int \frac{f^{\frac{c}{(a+bx)^2}}}{x}\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^2}}}{x},x\right)$$

```
[Out] Unintegrable[f^(c/(a + b*x)^2)/x, x]
```

Rubi [A] time = 0.0280491, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^2}}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c/(a + b*x)^2)/x,x]

[Out] Defer[Int][f^(c/(a + b*x)^2)/x, x]
```

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

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)/x,x)

[Out] Integral(f**(c/(a + b*x)**2)/x, x)
```

Mathematica [A] time = 0.0504792, size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c/(a + b*x)^2)/x,x]

[Out] Integrate[f^(c/(a + b*x)^2)/x, x]
```

Maple [A] time = 0.029, size = 0, normalized size = 0.

$$\int \frac{1}{x} f^{\frac{c}{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)/x,x)

[Out] int(f^(c/(b*x+a)^2)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^2)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{\frac{c}{b^2x^2+2\,abx+a^2}}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(c/(b^2*x^2 + 2*a*b*x + a^2))/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)/x,x)

[Out] Integral(f**(c/(a + b*x)**2)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^2)/x, x)
```

3.230 $\int \frac{f^{\frac{c}{(a+bx)^2}}}{x^2} \, dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^2}}}{x^2}, x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x)^2)/x^2, x]
```

Rubi [A] time = 0.0677062, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^2}}}{x^2}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c/(a + b*x)^2)/x^2,x]

[Out] Defer[Int][f^(c/(a + b*x)^2)/x^2, x]
```

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

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)/x**2,x)

[Out] Integral(f**(c/(a + b*x)**2)/x**2, x)
```

Mathematica [A] time = 0.173998, size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x^2} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c/(a + b*x)^2)/x^2,x]

[Out] Integrate[f^(c/(a + b*x)^2)/x^2, x]
```

Maple [A] time = 0.043, size = 0, normalized size = 0.

$$\int \frac{1}{x^2} f^{\frac{c}{(bx+a)^2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)/x^2,x)

[Out] int(f^(c/(b*x+a)^2)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^2)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{\frac{c}{b^2x^2+2\,abx+a^2}}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(c/(b^2*x^2 + 2*a*b*x + a^2))/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)/x**2,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^2)/x^2, x)
```

3.231 $\int \frac{f^{\frac{c}{(a+bx)^2}}}{x^3}\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^2}}}{x^3},x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x)^2)/x^3, x]
```

Rubi [A] time = 0.0595162, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^2}}}{x^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c/(a + b*x)^2)/x^3,x]

[Out] Defer[Int][f^(c/(a + b*x)^2)/x^3, x]
```

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

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)/x**3,x)

[Out] Integral(f**(c/(a + b*x)**2)/x**3, x)
```

Mathematica [A] time = 0.442565, size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^2}}}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c/(a + b*x)^2)/x^3,x]

[Out] Integrate[f^(c/(a + b*x)^2)/x^3, x]
```

Maple [A] time = 0.053, size = 0, normalized size = 0.

$$\int \frac{1}{x^3} f^{\frac{c}{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)/x^3,x)

[Out] int(f^(c/(b*x+a)^2)/x^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^2)/x^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{\frac{c}{b^2x^2+2\,abx+a^2}}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(c/(b^2*x^2 + 2*a*b*x + a^2))/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)/x**3,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^2)/x^3, x)
```

3.232 $\int f^{\frac{c}{(a+bx)^3}} x^4\, dx$

Optimal. Leaf size=239

$$\frac{a^4(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{4a^3(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}+\frac{(a+bx)^5\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{5/3}\text{Gamma}\left(-\frac{5}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{4a(a+bx)^4\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{2a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^5}+\frac{2a^2(a+bx)^3f^{\frac{c}{(a+bx)^3}}}{b^5}$$

```
[Out] (2*a^2*f^(c/(a + b*x)^3)*(a + b*x)^3)/b^5 - (2*a^2*c*ExpIntegralE
i[(c*Log[f])/(a + b*x)^3]*Log[f])/b^5 + (a^4*(a + b*x)*Gamma[-1/3
, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(1/3))/(
3*b^5) - (4*a^3*(a + b*x)^2*Gamma[-2/3, -((c*Log[f])/(a + b*x)^3)
]*(-((c*Log[f])/(a + b*x)^3))^(2/3))/(3*b^5) - (4*a*(a + b*x)^4*G
amma[-4/3, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))
^(4/3))/(3*b^5) + ((a + b*x)^5*Gamma[-5/3, -((c*Log[f])/(a + b*x)
^3)]*(-((c*Log[f])/(a + b*x)^3))^(5/3))/(3*b^5)
```

Rubi [A] time = 0.345389, antiderivative size = 239, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{a^4(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{4a^3(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}+\frac{(a+bx)^5\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{5/3}\text{Gamma}\left(-\frac{5}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{4a(a+bx)^4\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{2a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^5}+\frac{2a^2(a+bx)^3f^{\frac{c}{(a+bx)^3}}}{b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^3)*x^4,x]
```

```
[Out] (2*a^2*f^(c/(a + b*x)^3)*(a + b*x)^3)/b^5 - (2*a^2*c*ExpIntegralE
i[(c*Log[f])/(a + b*x)^3]*Log[f])/b^5 + (a^4*(a + b*x)*Gamma[-1/3
, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(1/3))/(
3*b^5) - (4*a^3*(a + b*x)^2*Gamma[-2/3, -((c*Log[f])/(a + b*x)^3)
]*(-((c*Log[f])/(a + b*x)^3))^(2/3))/(3*b^5) - (4*a*(a + b*x)^4*G
amma[-4/3, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))
^(4/3))/(3*b^5) + ((a + b*x)^5*Gamma[-5/3, -((c*Log[f])/(a + b*x)
^3)]*(-((c*Log[f])/(a + b*x)^3))^(5/3))/(3*b^5)
```

Rubi in Sympy [A] time = 36.0003, size = 252, normalized size = 1.05

$$\frac{a^4\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}(a+bx)\Gamma\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{4a^3\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{2}{3}}(a+bx)^2\Gamma\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}-\frac{2a^2c\log(f)\operatorname{Ei}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^5}+\frac{2a^2f^{\frac{c}{(a+bx)^3}}(a+bx)^3}{b^5}-\frac{4a\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{4}{3}}(a+bx)^4\Gamma\left(-\frac{4}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}+\frac{\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{5}{3}}(a+bx)^5\Gamma\left(-\frac{5}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   rubi_integrate(f**(c/(b*x+a)**3)*x**4,x)
```

```
[Out] a**4*(-c*log(f)/(a + b*x)**3)**(1/3)*(a + b*x)*Gamma(-1/3, -c*log
(f)/(a + b*x)**3)/(3*b**5) - 4*a**3*(-c*log(f)/(a + b*x)**3)**(2/
3)*(a + b*x)**2*Gamma(-2/3, -c*log(f)/(a + b*x)**3)/(3*b**5) - 2*
a**2*c*log(f)*Ei(c*log(f)/(a + b*x)**3)/b**5 + 2*a**2*f**(c/(a +
b*x)**3)*(a + b*x)**3/b**5 - 4*a*(-c*log(f)/(a + b*x)**3)**(4/3)*
(a + b*x)**4*Gamma(-4/3, -c*log(f)/(a + b*x)**3)/(3*b**5) + (-c*l
og(f)/(a + b*x)**3)**(5/3)*(a + b*x)**5*Gamma(-5/3, -c*log(f)/(a
+ b*x)**3)/(3*b**5)
```

Mathematica [A] time = 0.648932, size = 228, normalized size = 0.95

$$\frac{10ac\log(f)\left(a^3-3c\log(f)\right)\text{Gamma}\left(\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)+(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\left(c\log(f)\left(3c\log(f)-20a^3\right)\text{Gamma}\left(\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)\right.\cdots}{10b^5(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}}+\frac{bxf^{\frac{c}{(a+bx)^3}}\left(3c\log(f)(bx-8a)+2b^4x^4\right)-20a^2c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{10b^5}$$

Antiderivative was successfully verified.

```
[In]   Integrate[f^(c/(a + b*x)^3)*x^4,x]
```

```
[Out] (-20*a^2*c*ExpIntegralEi[(c*Log[f])/(a + b*x)^3]*Log[f] + b*f^(c/
(a + b*x)^3)*x*(2*b^4*x^4 + 3*c*(-8*a + b*x)*Log[f]))/(10*b^5) +
(10*a*c*Gamma[2/3, -((c*Log[f])/(a + b*x)^3)]*Log[f]*(a^3 - 3*c*L
og[f]) + (a + b*x)*(-((c*Log[f])/(a + b*x)^3))^(1/3)*(c*Gamma[1/3
, -((c*Log[f])/(a + b*x)^3)]*Log[f]*(-20*a^3 + 3*c*Log[f]) - a^2*
f^(c/(a + b*x)^3)*(a + b*x)*(-((c*Log[f])/(a + b*x)^3))^(1/3)*(-2
*a^3 + 27*c*Log[f])))/(10*b^5*(a + b*x)^2*(-((c*Log[f])/(a + b*x)
^3))^(2/3))
```

Maple [F] time = 0.054, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(c/(b*x+a)^3)*x^4,x)
```

```
[Out] int(f^(c/(b*x+a)^3)*x^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(2\,b^4x^5+3\,bcx^2\log\left(f\right)-24\,acx\log\left(f\right)\right)f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}}{10\,b^4} + \int \frac{3\left(20\,a^2b^3cx^3\log\left(f\right)+8\,a^5c\log\left(f\right)+\left(40\,a^3b^2c\log\left(f\right)+3\,b^2c^2\log\left(f\right)^2\right)x^2+6\left(5\,a^4bc\log\left(f\right)-4\,abc^2\log\left(f\right)^2\right)x\right)f^{\frac{c}{b^3x^3}}}{10\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/10*(2*b^4*x^5 + 3*b*c*x^2*log(f) - 24*a*c*x*log(f))*f^(c/(b^3*x
^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/b^4 + integrate(3/10*(20*a^2
*b^3*c*x^3*log(f) + 8*a^5*c*log(f) + (40*a^3*b^2*c*log(f) + 3*b^2
*c^2*log(f)^2)*x^2 + 6*(5*a^4*b*c*log(f) - 4*a*b*c^2*log(f)^2)*x)
*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/(b^8*x^4 + 4*a*b
^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4), x)
```

Fricas [A] time = 0.281039, size = 375, normalized size = 1.57

$$-\frac{\left(20\,a^3bc\log\left(f\right)-3\,bc^2\log\left(f\right)^2\right)\left(-\frac{c\log(f)}{b^3}\right)^{\frac{1}{3}}\left(\frac{1}{3},-\frac{c\log(f)}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\right)-10\left(a^4c\log\left(f\right)-3\,ac^2\log\left(f\right)^2\right)\left(\frac{2}{3},-\frac{c}{b^3x^3+3\,ab}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/10*((20*a^3*b*c*log(f) - 3*b*c^2*log(f)^2)*(-c*log(f)/b^3)^(1/
3)*gamma(1/3, -c*log(f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)
) - 10*(a^4*c*log(f) - 3*a*c^2*log(f)^2)*gamma(2/3, -c*log(f)/(b^
3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)) + (20*a^2*b^2*c*Ei(c*log(
f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) - (2*b^7*x^5
 + 2*a^5*b^2 + 3*(b^4*c*x^2 - 8*a*b^3*c*x - 9*a^2*b^2*c)*log(f))*
f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)))*(-c*log(f)/b^3)^
(2/3))/(b^7*(-c*log(f)/b^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)*x**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}x^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^3)*x^4, x)
```

3.233 $\int f^{\frac{c}{(a+bx)^3}} x^3 \, dx$

Optimal. Leaf size=184

$$-\frac{a^3(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^4}+\frac{a^2(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}+\frac{(a+bx)^4\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^4}+\frac{ac\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}-\frac{a(a+bx)^3f^{\frac{c}{(a+bx)^3}}}{b^4}$$

```
[Out] -((a*f^(c/(a + b*x)^3)*(a + b*x)^3)/b^4) + (a*c*ExpIntegralEi[(c*
Log[f])/(a + b*x)^3]*Log[f])/b^4 - (a^3*(a + b*x)*Gamma[-1/3, -((
c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(1/3))/(3*b^4
) + (a^2*(a + b*x)^2*Gamma[-2/3, -((c*Log[f])/(a + b*x)^3)]*(-((c
*Log[f])/(a + b*x)^3))^(2/3))/b^4 + ((a + b*x)^4*Gamma[-4/3, -((c
*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(4/3))/(3*b^4)
```

Rubi [A] time = 0.268448, antiderivative size = 184, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$-\frac{a^3(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^4}+\frac{a^2(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}+\frac{(a+bx)^4\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^4}+\frac{ac\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}-\frac{a(a+bx)^3f^{\frac{c}{(a+bx)^3}}}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^3)*x^3,x]
```

```
[Out] -((a*f^(c/(a + b*x)^3)*(a + b*x)^3)/b^4) + (a*c*ExpIntegralEi[(c*
Log[f])/(a + b*x)^3]*Log[f])/b^4 - (a^3*(a + b*x)*Gamma[-1/3, -((
c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(1/3))/(3*b^4
) + (a^2*(a + b*x)^2*Gamma[-2/3, -((c*Log[f])/(a + b*x)^3)]*(-((c
*Log[f])/(a + b*x)^3))^(2/3))/b^4 + ((a + b*x)^4*Gamma[-4/3, -((c
*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(4/3))/(3*b^4)
```

Rubi in Sympy [A] time = 28.4839, size = 190, normalized size = 1.03

$$-\frac{a^3\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}(a+bx)\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^4}+\frac{a^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{2}{3}}(a+bx)^2\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}+\frac{ac\log(f)\,\text{Ei}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}-\frac{af^{\frac{c}{(a+bx)^3}}(a+bx)^3}{b^4}+\frac{\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{4}{3}}(a+bx)^4\left(-\frac{4}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**3)*x**3,x)
```

```
[Out] -a**3*(-c*log(f)/(a + b*x)**3)**(1/3)*(a + b*x)*Gamma(-1/3, -c*lo
g(f)/(a + b*x)**3)/(3*b**4) + a**2*(-c*log(f)/(a + b*x)**3)**(2/3
)*(a + b*x)**2*Gamma(-2/3, -c*log(f)/(a + b*x)**3)/b**4 + a*c*log
(f)*Ei(c*log(f)/(a + b*x)**3)/b**4 - a*f**(c/(a + b*x)**3)*(a + b
*x)**3/b**4 + (-c*log(f)/(a + b*x)**3)**(4/3)*(a + b*x)**4*Gamma(
-4/3, -c*log(f)/(a + b*x)**3)/(3*b**4)
```

Mathematica [A] time = 0.553319, size = 201, normalized size = 1.09

$$\frac{a(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\left(6ac\log(f)\text{Gamma}\left(\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)+(a+bx)\left(3c\log(f)-a^3\right)f^{\frac{c}{(a+bx)^3}}\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\right)+c\log(f)\left(3c\log \ldots}{4b^4(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}}$$
$$+\frac{ac\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{b^4}+\frac{1}{4}xf^{\frac{c}{(a+bx)^3}}\left(\frac{3c\log(f)}{b^3}+x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^3)*x^3,x]
```

```
[Out] (a*c*ExpIntegralEi[(c*Log[f])/(a + b*x)^3]*Log[f])/b^4 + (f^(c/(a
 + b*x)^3)*x*(x^3 + (3*c*Log[f])/b^3))/4 + (c*Gamma[2/3, -((c*Log
[f])/(a + b*x)^3)]*Log[f]*(-4*a^3 + 3*c*Log[f]) + a*(a + b*x)*(-(
(c*Log[f])/(a + b*x)^3))^(1/3)*(6*a*c*Gamma[1/3, -((c*Log[f])/(a
+ b*x)^3)]*Log[f] + f^(c/(a + b*x)^3)*(a + b*x)*(-((c*Log[f])/(a
+ b*x)^3))^(1/3)*(-a^3 + 3*c*Log[f])))/(4*b^4*(a + b*x)^2*(-((c*L
og[f])/(a + b*x)^3))^(2/3))
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^3)*x^3,x)
```

```
[Out] int(f^(c/(b*x+a)^3)*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^3x^4+3\,cx\log(f)\right)f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}}{4\,b^3}$$
$$-\int\frac{3\left(4\,ab^3cx^3\log(f)+6\,a^2b^2cx^2\log(f)+a^4c\log(f)+\left(4\,a^3bc\log(f)-3\,bc^2\log(f)^2\right)x\right)f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}}{4\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x^3,x, algorithm="maxima")
```

```
[Out] 1/4*(b^3*x^4 + 3*c*x*log(f))*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*
b*x + a^3))/b^3 - integrate(3/4*(4*a*b^3*c*x^3*log(f) + 6*a^2*b^2
*c*x^2*log(f) + a^4*c*log(f) + (4*a^3*b*c*log(f) - 3*b*c^2*log(f)
^2)*x)*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/(b^7*x^4 +
 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3), x)
```

Fricas [A] time = 0.288293, size = 336, normalized size = 1.83

$$\frac{6\,a^2bc\left(-\frac{c\log(f)}{b^3}\right)^{\frac{1}{3}}\left(\frac{1}{3}, -\frac{c\log(f)}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\right)\log(f) - \left(4\,a^3c\log(f) - 3\,c^2\log(f)^2\right)\left(\frac{2}{3}, -\frac{c\log(f)}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\right) + \left(4\,ab^2c\right.}{4\,b^6\left(-\frac{c\log(f)}{b^3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x^3,x, algorithm="fricas")
```

```
[Out] 1/4*(6*a^2*b*c*(-c*log(f)/b^3)^(1/3)*gamma(1/3, -c*log(f)/(b^3*x^
3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) - (4*a^3*c*log(f) - 3*
c^2*log(f)^2)*gamma(2/3, -c*log(f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2
*b*x + a^3)) + (4*a*b^2*c*Ei(c*log(f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*
a^2*b*x + a^3))*log(f) + (b^6*x^4 - a^4*b^2 + 3*(b^3*c*x + a*b^2*
c)*log(f))*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)))*(-c*l
og(f)/b^3)^(2/3))/(b^6*(-c*log(f)/b^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)*x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x^3,x, algorithm="giac")
```

```
[Out] integrate(f^(c/(b*x + a)^3)*x^3, x)
```

3.234 $\int f^{\frac{c}{(a+bx)^3}} x^2 \, dx$

Optimal. Leaf size=142

$$\frac{a^2(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}-\frac{2a(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}+\frac{(a+bx)^3f^{\frac{c}{(a+bx)^3}}}{3b^3}$$

```
[Out] (f^(c/(a + b*x)^3)*(a + b*x)^3)/(3*b^3) - (c*ExpIntegralEi[(c*Log
[f])/(a + b*x)^3]*Log[f])/(3*b^3) + (a^2*(a + b*x)*Gamma[-1/3, -(
(c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(1/3))/(3*b^
3) - (2*a*(a + b*x)^2*Gamma[-2/3, -((c*Log[f])/(a + b*x)^3)]*(-((
c*Log[f])/(a + b*x)^3))^(2/3))/(3*b^3)
```

Rubi [A] time = 0.208216, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$\frac{a^2(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}-\frac{2a(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}+\frac{(a+bx)^3f^{\frac{c}{(a+bx)^3}}}{3b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^3)*x^2,x]
```

```
[Out] (f^(c/(a + b*x)^3)*(a + b*x)^3)/(3*b^3) - (c*ExpIntegralEi[(c*Log
[f])/(a + b*x)^3]*Log[f])/(3*b^3) + (a^2*(a + b*x)*Gamma[-1/3, -(
(c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(1/3))/(3*b^
3) - (2*a*(a + b*x)^2*Gamma[-2/3, -((c*Log[f])/(a + b*x)^3)]*(-((
c*Log[f])/(a + b*x)^3))^(2/3))/(3*b^3)
```

Rubi in Sympy [A] time = 20.5283, size = 144, normalized size = 1.01

$$\frac{a^2\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}(a+bx)\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}-\frac{2a\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{2}{3}}(a+bx)^2\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}-\frac{c\log(f)\,\text{Ei}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}+\frac{f^{\frac{c}{(a+bx)^3}}(a+bx)^3}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**3)*x**2,x)
```

```
[Out] a**2*(-c*log(f)/(a + b*x)**3)**(1/3)*(a + b*x)*Gamma(-1/3, -c*log
(f)/(a + b*x)**3)/(3*b**3) - 2*a*(-c*log(f)/(a + b*x)**3)**(2/3)*
(a + b*x)**2*Gamma(-2/3, -c*log(f)/(a + b*x)**3)/(3*b**3) - c*log
(f)*Ei(c*log(f)/(a + b*x)**3)/(3*b**3) + f**(c/(a + b*x)**3)*(a +
 b*x)**3/(3*b**3)
```

Mathematica [A] time = 1.88326, size = 178, normalized size = 1.25

$$-\frac{ac\log(f)\left((a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\left(a^2(a+bx)f^{\frac{c}{(a+bx)^3}}\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}-3c\log(f)\text{Gamma}\left(\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)\right)+3ac\log(f)\text{Gamma}}{3b^3(a+bx)^5\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{5/3}}$$

$$-\frac{c\log(f)\text{ExpIntegralEi}\left(\frac{c\log(f)}{(a+bx)^3}\right)}{3b^3}+\frac{1}{3}x^3f^{\frac{c}{(a+bx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^3)*x^2,x]
```

```
[Out] (f^(c/(a + b*x)^3)*x^3)/3 - (c*ExpIntegralEi[(c*Log[f])/(a + b*x)
^3]*Log[f])/(3*b^3) - (a*c*Log[f]*(3*a*c*Gamma[2/3, -((c*Log[f])/
(a + b*x)^3)]*Log[f] + (a + b*x)*(-((c*Log[f])/(a + b*x)^3))^(1/3
)*(-3*c*Gamma[1/3, -((c*Log[f])/(a + b*x)^3)]*Log[f] + a^2*f^(c/(
a + b*x)^3)*(a + b*x)*(-((c*Log[f])/(a + b*x)^3))^(1/3))))/(3*b^3
*(a + b*x)^5*(-((c*Log[f])/(a + b*x)^3))^(5/3))
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^3)*x^2,x)
```

```
[Out] int(f^(c/(b*x+a)^3)*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}f^{\frac{c}{b^3x^3+3ab^2x^2+3a^2bx+a^3}}x^3+bc\int\frac{f^{\frac{c}{b^3x^3+3ab^2x^2+3a^2bx+a^3}}x^3}{b^4x^4+4ab^3x^3+6a^2b^2x^2+4a^3bx+a^4}\,dx\log(f)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*x^3 + b*c*int
egrate(f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*x^3/(b^4*x
^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4), x)*log(f)
```

Fricas [A] time = 0.266775, size = 292, normalized size = 2.06

$$-\frac{3abc\left(-\frac{c\log(f)}{b^3}\right)^{\frac{1}{3}}\left(\frac{1}{3},-\frac{c\log(f)}{b^3x^3+3ab^2x^2+3a^2bx+a^3}\right)\log(f)-3a^2c\left(\frac{2}{3},-\frac{c\log(f)}{b^3x^3+3ab^2x^2+3a^2bx+a^3}\right)\log(f)+\left(b^2c\text{Ei}\left(\frac{c\log(f)}{b^3x^3+3ab^2x^2+3a}\right.\right.}{3b^5\left(-\frac{c\log(f)}{b^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(3*a*b*c*(-c*log(f)/b^3)^(1/3)*gamma(1/3, -c*log(f)/(b^3*x^3
 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) - 3*a^2*c*gamma(2/3, -c
*log(f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) + (b^2*
c*Ei(c*log(f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) -
 (b^5*x^3 + a^3*b^2)*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)))*(-c*log(f)/b^3)^(2/3))/(b^5*(-c*log(f)/b^3)^(2/3))
```

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

$$\int f^{\frac{c}{(a+bx)^3}} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)*x**2,x)
```

```
[Out] Integral(f**(c/(a + b*x)**3)*x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c/(b*x + a)^3)*x^2, x)
```

3.235 $\int f^{\frac{c}{(a+bx)^3}} x\,dx$

Optimal. Leaf size=92

$$\frac{(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^2}-\frac{a(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^2}$$

```
[Out] -(a*(a + b*x)*Gamma[-1/3, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f]
)/(a + b*x)^3))^(1/3))/(3*b^2) + ((a + b*x)^2*Gamma[-2/3, -((c*Lo
g[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(2/3))/(3*b^2)
```

Rubi [A] time = 0.0982524, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^2}-\frac{a(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^3)*x,x]
```

```
[Out] -(a*(a + b*x)*Gamma[-1/3, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f]
)/(a + b*x)^3))^(1/3))/(3*b^2) + ((a + b*x)^2*Gamma[-2/3, -((c*Lo
g[f])/(a + b*x)^3)]*(-((c*Log[f])/(a + b*x)^3))^(2/3))/(3*b^2)
```

Rubi in Sympy [A] time = 8.51181, size = 94, normalized size = 1.02

$$-\frac{a\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}(a+bx)\Gamma\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^2}+\frac{\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{\frac{2}{3}}(a+bx)^2\Gamma\left(-\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**3)*x,x)
```

```
[Out] -a*(-c*log(f)/(a + b*x)**3)**(1/3)*(a + b*x)*Gamma(-1/3, -c*log(f
)/(a + b*x)**3)/(3*b**2) + (-c*log(f)/(a + b*x)**3)**(2/3)*(a + b
*x)**2*Gamma(-2/3, -c*log(f)/(a + b*x)**3)/(3*b**2)
```

Mathematica [A] time = 0.350919, size = 139, normalized size = 1.51

$$\frac{c\log(f)\text{Gamma}\left(\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{2b^2(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}}-\frac{ac\log(f)\text{Gamma}\left(\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{b^2(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}}+\frac{\left(\frac{(a+bx)^2}{2b}-\frac{a(a+bx)}{b}\right)f^{\frac{c}{(a+bx)^3}}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^3)*x,x]
```

```
[Out] (f^(c/(a + b*x)^3)*(-((a*(a + b*x))/b) + (a + b*x)^2/(2*b)))/b -
(a*c*Gamma[2/3, -((c*Log[f])/(a + b*x)^3)]*Log[f])/(b^2*(a + b*x)
^2*(-((c*Log[f])/(a + b*x)^3))^(2/3)) + (c*Gamma[1/3, -((c*Log[f]
)/(a + b*x)^3)]*Log[f])/(2*b^2*(a + b*x)*(-((c*Log[f])/(a + b*x)^
3))^(1/3))
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(c/(b*x+a)^3)*x,x)
```

```
[Out] int(f^(c/(b*x+a)^3)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$3\,bc\int \frac{f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}x^2}{2\,(b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4)}\,dx\log(f)+\frac{1}{2}\,f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(c/(b*x + a)^3)*x,x, algorithm="maxima")
```

```
[Out] 3*b*c*integrate(1/2*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3
))*x^2/(b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4),
 x)*log(f) + 1/2*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*
x^2
```

Fricas [A] time = 0.276315, size = 228, normalized size = 2.48

$$\frac{bc\left(-\frac{c\log(f)}{b^3}\right)^{\frac{1}{3}}\left(\frac{1}{3},-\frac{c\log(f)}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\right)\log(f)-2\,ac\left(\frac{2}{3},-\frac{c\log(f)}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\right)\log(f)+\left(b^4x^2-a^2b^2\right)f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a}}}{2\,b^4\left(-\frac{c\log(f)}{b^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f^(c/(b*x + a)^3)*x,x, algorithm="fricas")
```

```
[Out] 1/2*(b*c*(-c*log(f)/b^3)^(1/3)*gamma(1/3, -c*log(f)/(b^3*x^3 + 3*
a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) - 2*a*c*gamma(2/3, -c*log(f)
/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*log(f) + (b^4*x^2 - a
^2*b^2)*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*(-c*log(f
)/b^3)^(2/3))/(b^4*(-c*log(f)/b^3)^(2/3))
```

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

$$\int f^{\frac{c}{(a+bx)^3}} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)*x,x)

[Out] Integral(f**(c/(a + b*x)**3)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a)^3)*x, x)
```

3.236 $\int f^{\frac{c}{(a+bx)^3}}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\,\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b}$$

```
[Out] ((a + b*x)*Gamma[-1/3, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(
a + b*x)^3))^(1/3))/(3*b)
```

Rubi [A] time = 0.0162273, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{(a+bx)\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\,\text{Gamma}\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c/(a + b*x)^3),x]
```

```
[Out] ((a + b*x)*Gamma[-1/3, -((c*Log[f])/(a + b*x)^3)]*(-((c*Log[f])/(
a + b*x)^3))^(1/3))/(3*b)
```

Rubi in Sympy [A] time = 1.74028, size = 42, normalized size = 0.95

$$\frac{\sqrt[3]{-\frac{c\log(f)}{(a+bx)^3}}\,(a+bx)\left(-\frac{1}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**3),x)
```

```
[Out] (-c*log(f)/(a + b*x)**3)**(1/3)*(a + b*x)*Gamma(-1/3, -c*log(f)/(
a + b*x)**3)/(3*b)
```

Mathematica [A] time = 0.00613503, size = 67, normalized size = 1.52

$$\frac{c\log(f)\text{Gamma}\left(\frac{2}{3},-\frac{c\log(f)}{(a+bx)^3}\right)}{b(a+bx)^2\left(-\frac{c\log(f)}{(a+bx)^3}\right)^{2/3}}+\frac{(a+bx)f^{\frac{c}{(a+bx)^3}}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c/(a + b*x)^3),x]
```

```
[Out] (f^(c/(a + b*x)^3)*(a + b*x))/b + (c*Gamma[2/3, -((c*Log[f])/(a +
 b*x)^3)]*Log[f])/(b*(a + b*x)^2*(-((c*Log[f])/(a + b*x)^3))^(2/3
))
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^3),x)
```

```
[Out] int(f^(c/(b*x+a)^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$3\,bc\int \frac{f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}x}{b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4}\,dx\log\left(f\right)+f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3),x, algorithm="maxima")
```

```
[Out] 3*b*c*integrate(f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*x
/(b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4), x)*lo
g(f) + f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*x
```

Fricas [A] time = 0.268546, size = 149, normalized size = 3.39

$$\frac{c\left(\frac{2}{3},-\frac{c\log(f)}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}\right)\log\left(f\right)+\left(b^3x+ab^2\right)f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}\left(-\frac{c\log(f)}{b^3}\right)^{\frac{2}{3}}}{b^3\left(-\frac{c\log(f)}{b^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3),x, algorithm="fricas")
```

```
[Out] (c*gamma(2/3, -c*log(f)/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)
)*log(f) + (b^3*x + a*b^2)*f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*
x + a^3))*(-c*log(f)/b^3)^(2/3))/(b^3*(-c*log(f)/b^3)^(2/3))
```

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

$$\int f^{\frac{c}{(a+bx)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3),x)
```

```
[Out] Integral(f**(c/(a + b*x)**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3),x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a)^3), x)
```

3.237 $\int \frac{f^{\frac{c}{(a+bx)^3}}}{x}\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^3}}}{x},x\right)$$

```
[Out] Unintegrable[f^(c/(a + b*x)^3)/x, x]
```

Rubi [A] time = 0.0291732, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^3}}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c/(a + b*x)^3)/x,x]

[Out] Defer[Int][f^(c/(a + b*x)^3)/x, x]
```

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

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c/(b*x+a)**3)/x,x)

[Out] Integral(f**(c/(a + b*x)**3)/x, x)
```

Mathematica [A] time = 0.0401015, size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c/(a + b*x)^3)/x,x]

[Out] Integrate[f^(c/(a + b*x)^3)/x, x]
```

Maple [A] time = 0.026, size = 0, normalized size = 0.

$$\int \frac{1}{x} f^{\frac{c}{(bx+a)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^3)/x,x)
```

```
[Out] int(f^(c/(b*x+a)^3)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)/x,x, algorithm="maxima")
```

```
[Out] integrate(f^(c/(b*x + a)^3)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)/x,x, algorithm="fricas")
```

```
[Out] integral(f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)/x,x)
```

```
[Out] Integral(f**(c/(a + b*x)**3)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)/x,x, algorithm="giac")
```

```
[Out] integrate(f^(c/(b*x + a)^3)/x, x)
```

3.238 $\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^2}\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^3}}}{x^2},x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x)^3)/x^2, x]
```

Rubi [A] time = 0.0699352, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^3}}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c/(a + b*x)^3)/x^2,x]

[Out] Defer[Int][f^(c/(a + b*x)^3)/x^2, x]
```

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

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**3)/x**2,x)

[Out] Integral(f**(c/(a + b*x)**3)/x**2, x)
```

Mathematica [A] time = 0.240163, size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c/(a + b*x)^3)/x^2,x]

[Out] Integrate[f^(c/(a + b*x)^3)/x^2, x]
```

Maple [A] time = 0.039, size = 0, normalized size = 0.

$$\int \frac{1}{x^2} f^{\frac{c}{(bx+a)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^3)/x^2,x)

[Out] int(f^(c/(b*x+a)^3)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^3}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^3)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)/x**2,x)

[Out] Integral(f**(c/(a + b*x)**3)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^3}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c/(b*x + a)^3)/x^2, x)
```

3.239 $\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^3} dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^3}}}{x^3}, x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x)^3)/x^3, x]
```

Rubi [A] time = 0.0609952, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{\frac{c}{(a+bx)^3}}}{x^3}, x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c/(a + b*x)^3)/x^3,x]

[Out] Defer[Int][f^(c/(a + b*x)^3)/x^3, x]
```

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

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c/(b*x+a)**3)/x**3,x)

[Out] Integral(f**(c/(a + b*x)**3)/x**3, x)
```

Mathematica [A] time = 0.040339, size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^3} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c/(a + b*x)^3)/x^3,x]

[Out] Integrate[f^(c/(a + b*x)^3)/x^3, x]
```

Maple [A] time = 0.056, size = 0, normalized size = 0.

$$\int \frac{1}{x^3} f^{\frac{c}{(bx+a)^3}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^3)/x^3,x)

[Out] int(f^(c/(b*x+a)^3)/x^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^3}}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)/x^3,x, algorithm="maxima")

[Out] integrate(f^(c/(b*x + a)^3)/x^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)/x^3,x, algorithm="fricas")

[Out] integral(f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))/x^3, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(a+bx)^3}}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)/x**3,x)

[Out] Integral(f**(c/(a + b*x)**3)/x**3, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{\frac{c}{(bx+a)^3}}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)/x^3,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a)^3)/x^3, x)
```

3.240 $\int f^{c(a+bx)^3} x^m \, dx$

Optimal. Leaf size=18

$$\text{Int}\left(x^m f^{c(a+bx)^3}, x\right)$$

```
[Out] CannotIntegrate[f^(c*(a + b*x)^3)*x^m, x]
```

Rubi [A] time = 0.0781501, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(f^{c(a+bx)^3} x^m, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^3)*x^m,x]

[Out] Defer[Int][f^(c*(a + b*x)^3)*x^m, x]
```

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

$$\int f^{c(a+bx)^3} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**3)*x**m,x)

[Out] Integral(f**(c*(a + b*x)**3)*x**m, x)
```

Mathematica [A] time = 0.378169, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^3} x^m \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^3)*x^m,x]

[Out] Integrate[f^(c*(a + b*x)^3)*x^m, x]
```

Maple [A] time = 0.048, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^3} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^3)*x^m,x)
```

```
[Out] int(f^(c*(b*x+a)^3)*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3c} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x^m,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^3*c)*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{b^3cx^3+3\,ab^2cx^2+3\,a^2bcx+a^3c}x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^(b^3*c*x^3 + 3*a*b^2*c*x^2 + 3*a^2*b*c*x + a^3*c)*x^m,
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**3)*x**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^3c} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^3*c)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^3*c)*x^m, x)
```

3.241 $\int f^{c(a+bx)^2} x^m \, dx$

Optimal. Leaf size=29

$$\text{Int}\left(x^m f^{a^2 c+2abcx+b^2 cx^2}, x\right)$$

```
[Out] Unintegrable[f^(a^2*c + 2*a*b*c*x + b^2*c*x^2)*x^m, x]
```

Rubi [A] time = 0.0831965, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(f^{c(a+bx)^2} x^m, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^2)*x^m,x]

[Out] Defer[Int][f^(a^2*c + 2*a*b*c*x + b^2*c*x^2)*x^m, x]
```

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

$$\int f^{a^2 c+2abcx+b^2 cx^2} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**2)*x**m,x)

[Out] Integral(f**(a**2*c + 2*a*b*c*x + b**2*c*x**2)*x**m, x)
```

Mathematica [A] time = 0.195754, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^2} x^m \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^2)*x^m,x]

[Out] Integrate[f^(c*(a + b*x)^2)*x^m, x]
```

Maple [A] time = 0.041, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^2} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^2)*x^m,x)
```

```
[Out] int(f^(c*(b*x+a)^2)*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^2c}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^m,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^2*c)*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{b^2cx^2+2\,abcx+a^2c}x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^(b^2*c*x^2 + 2*a*b*c*x + a^2*c)*x^m, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int f^{c(a+bx)^2}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**2)*x**m,x)
```

```
[Out] Integral(f**(c*(a + b*x)**2)*x**m, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^2c}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^2*c)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^2*c)*x^m, x)
```

3.242 $\int f^{c(a+bx)} x^m \, dx$

Optimal. Leaf size=41

$$\frac{x^m f^{ac}(-bcx\log(f))^{-m}\text{Gamma}(m+1,-bcx\log(f))}{bc\log(f)}$$

```
[Out] (f^(a*c)*x^m*Gamma[1 + m, -(b*c*x*Log[f])])/(b*c*Log[f]*(-(b*c*x*
Log[f]))^m)
```

Rubi [A] time = 0.041154, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{x^m f^{ac}(-bcx\log(f))^{-m}\text{Gamma}(m+1,-bcx\log(f))}{bc\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x))*x^m,x]
```

```
[Out] (f^(a*c)*x^m*Gamma[1 + m, -(b*c*x*Log[f])])/(b*c*Log[f]*(-(b*c*x*
Log[f]))^m)
```

Rubi in Sympy [A] time = 4.00945, size = 39, normalized size = 0.95

$$\frac{f^{ac}x^m\left(-bcx\log\left(f\right)\right)^{-m}\left(m+1,-bcx\log\left(f\right)\right)}{bc\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a))*x**m,x)
```

```
[Out] f**(a*c)*x**m*(-b*c*x*log(f))**(-m)*Gamma(m + 1, -b*c*x*log(f))/(
b*c*log(f))
```

Mathematica [A] time = 0.0198949, size = 36, normalized size = 0.88

$$x^{m+1}\left(-f^{ac}\right)\left(-bcx\log(f)\right)^{-m-1}\text{Gamma}(m+1,-bcx\log(f))$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c*(a + b*x))*x^m,x]
```

```
[Out] -(f^(a*c)*x^(1 + m)*Gamma[1 + m, -(b*c*x*Log[f])]*(-(b*c*x*Log[f]
))^(-1 - m))
```

Maple [B] time = 0.049, size = 117, normalized size = 2.9

$$-\frac{f^{ac}\left(-cb\right)^{-m}\left(\ln\left(f\right)\right)^{-m-1}\left(x^m\left(-cb\right)^m\left(\ln\left(f\right)\right)^m m\left(m\right)\left(-bcx\ln\left(f\right)\right)^{-m}-x^m\left(-cb\right)^m\left(\ln\left(f\right)\right)^m e^{bcx\ln(f)}-x^m\left(-cb\right)^m\left(\ln\left(f\right)\right.}{cb}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a))*x^m,x)
```

```
[Out] -f^(a*c)*(-c*b)^(-m)*ln(f)^(-m-1)/c/b*(x^m*(-c*b)^m*ln(f)^m*m*GAM
MA(m)*(-b*c*x*ln(f))^(-m)-x^m*(-c*b)^m*ln(f)^m*exp(b*c*x*ln(f))-x
^m*(-c*b)^m*ln(f)^m*m*(-b*c*x*ln(f))^(-m)*GAMMA(m,-b*c*x*ln(f)))
```

Maxima [A] time = 0.864797, size = 49, normalized size = 1.2

$$-\left(-bcx\log\left(f\right)\right)^{-m-1}f^{ac}x^{m+1}\left(m+1,-bcx\log\left(f\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)*c)*x^m,x, algorithm="maxima")
```

```
[Out] -(-b*c*x*log(f))^(-m - 1)*f^(a*c)*x^(m + 1)*gamma(m + 1, -b*c*x*l
og(f))
```

Fricas [A] time = 0.265824, size = 53, normalized size = 1.29

$$\frac{e^{\left(ac\log(f)-m\log(-bc\log(f))\right)}\left(m+1,-bcx\log\left(f\right)\right)}{bc\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)*c)*x^m,x, algorithm="fricas")
```

```
[Out] e^(a*c*log(f) - m*log(-b*c*log(f)))*gamma(m + 1, -b*c*x*log(f))/(
b*c*log(f))
```

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

$$\int f^{c(a+bx)}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a))*x**m,x)
```

```
[Out] Integral(f**(c*(a + b*x))*x**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)c}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)*c)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)*c)*x^m, x)
```

3.243 $\int f^{\frac{c}{a+bx}} x^m \, dx$

Optimal. Leaf size=18

$$\text{Int}\left(x^m f^{\frac{c}{a+bx}}, x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x))*x^m, x]
```

Rubi [A] time = 0.063994, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(f^{\frac{c}{a+bx}} x^m, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c/(a + b*x))*x^m,x]

[Out] Defer[Int][f^(c/(a + b*x))*x^m, x]
```

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

$$\int f^{\frac{c}{a+bx}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a))*x**m,x)

[Out] Integral(f**(c/(a + b*x))*x**m, x)
```

Mathematica [A] time = 0.0441554, size = 0, normalized size = 0.

$$\int f^{\frac{c}{a+bx}} x^m \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c/(a + b*x))*x^m,x]

[Out] Integrate[f^(c/(a + b*x))*x^m, x]
```

Maple [A] time = 0.059, size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a))*x^m,x)
```

```
[Out] int(f^(c/(b*x+a))*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x^m,x, algorithm="maxima")

[Out] integrate(f^(c/(b*x + a))*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{\frac{c}{bx+a}}x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x^m,x, algorithm="fricas")

[Out] integral(f^(c/(b*x + a))*x^m, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{a+bx}}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a))*x**m,x)

[Out] Integral(f**(c/(a + b*x))*x**m, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{bx+a}}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a))*x^m,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a))*x^m, x)
```

3.244 $\int f^{\frac{c}{(a+bx)^2}} x^m \, dx$

Optimal. Leaf size=18

$$\text{Int}\left(x^m f^{\frac{c}{(a+bx)^2}}, x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x)^2)*x^m, x]
```

Rubi [A] time = 0.0645127, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(f^{\frac{c}{(a+bx)^2}} x^m, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c/(a + b*x)^2)*x^m,x]
```

```
[Out] Defer[Int][f^(c/(a + b*x)^2)*x^m, x]
```

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

$$\int f^{\frac{c}{(a+bx)^2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c/(b*x+a)**2)*x**m,x)
```

```
[Out] Integral(f**(c/(a + b*x)**2)*x**m, x)
```

Mathematica [A] time = 0.0748207, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(a+bx)^2}} x^m \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c/(a + b*x)^2)*x^m,x]
```

```
[Out] Integrate[f^(c/(a + b*x)^2)*x^m, x]
```

Maple [A] time = 0.064, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c/(b*x+a)^2)*x^m,x)
```

```
[Out] int(f^(c/(b*x+a)^2)*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^2)*x^m,x, algorithm="maxima")

[Out] integrate(f^(c/(b*x + a)^2)*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{\frac{c}{b^2x^2+2\,abx+a^2}} x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^2)*x^m,x, algorithm="fricas")

[Out] integral(f^(c/(b^2*x^2 + 2*a*b*x + a^2))*x^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**2)*x**m,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^2)*x^m,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a)^2)*x^m, x)
```

3.245 $\int f^{\frac{c}{(a+bx)^3}} x^m\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(x^m f^{\frac{c}{(a+bx)^3}},x\right)$$

```
[Out] CannotIntegrate[f^(c/(a + b*x)^3)*x^m, x]
```

Rubi [A] time = 0.0667885, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(f^{\frac{c}{(a+bx)^3}} x^m,x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c/(a + b*x)^3)*x^m,x]

[Out] Defer[Int][f^(c/(a + b*x)^3)*x^m, x]
```

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

$$\int f^{\frac{c}{(a+bx)^3}} x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c/(b*x+a)**3)*x**m,x)

[Out] Integral(f**(c/(a + b*x)**3)*x**m, x)
```

Mathematica [A] time = 0.0772461, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(a+bx)^3}} x^m\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c/(a + b*x)^3)*x^m,x]

[Out] Integrate[f^(c/(a + b*x)^3)*x^m, x]
```

Maple [A] time = 0.07, size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}} x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(c/(b*x+a)^3)*x^m,x)
```

```
[Out] int(f^(c/(b*x+a)^3)*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x^m,x, algorithm="maxima")

[Out] integrate(f^(c/(b*x + a)^3)*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{\frac{c}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}} x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x^m,x, algorithm="fricas")

[Out] integral(f^(c/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3))*x^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c/(b*x+a)**3)*x**m,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int f^{\frac{c}{(bx+a)^3}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c/(b*x + a)^3)*x^m,x, algorithm="giac")

[Out] integrate(f^(c/(b*x + a)^3)*x^m, x)
```

3.246 $\int f^{c(a+bx)^n} x^m \, dx$

Optimal. Leaf size=18

$$\text{Int}\left(x^m f^{c(a+bx)^n}, x\right)$$

```
[Out] CannotIntegrate[f^(c*(a + b*x)^n)*x^m, x]
```

Rubi [A] time = 0.0817387, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(f^{c(a+bx)^n} x^m, x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c*(a + b*x)^n)*x^m,x]

[Out] Defer[Int][f^(c*(a + b*x)^n)*x^m, x]
```

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

$$\int f^{c(a+bx)^n} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*(b*x+a)**n)*x**m,x)

[Out] Integral(f**(c*(a + b*x)**n)*x**m, x)
```

Mathematica [A] time = 0.0522833, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^n} x^m \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c*(a + b*x)^n)*x^m,x]

[Out] Integrate[f^(c*(a + b*x)^n)*x^m, x]
```

Maple [A] time = 0.044, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^n} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(c*(b*x+a)^n)*x^m,x)
```

```
[Out] int(f^(c*(b*x+a)^n)*x^m,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^m,x, algorithm="maxima")

[Out] integrate(f^((b*x + a)^n*c)*x^m, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{(bx+a)^n c} x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^m,x, algorithm="fricas")

[Out] integral(f^((b*x + a)^n*c)*x^m, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int f^{c(a+bx)^n} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)*x**m,x)

[Out] Integral(f**(c*(a + b*x)**n)*x**m, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^m,x, algorithm="giac")

[Out] integrate(f^((b*x + a)^n*c)*x^m, x)
```

3.247 $\int f^{c(a+bx)^n} x^3 \, dx$

Optimal. Leaf size=207

$$\frac{a^3(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{b^4n} - \frac{3a^2(a+bx)^2\left(-c\log(f)(a+bx)^n\right)^{-2/n}\text{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)}{b^4n} - \frac{(a+bx)^4\left(-c\log(f)(a+bx)^n\right)^{-4/n}\text{Gamma}\left(\frac{4}{n},-c\log(f)(a+bx)^n\right)}{b^4n} + \frac{3a(a+bx)^3\left(-c\log(f)(a+bx)^n\right)^{-3/n}\text{Gamma}\left(\frac{3}{n},-c\log(f)(a+bx)^n\right)}{b^4n}$$

```
[Out] -(((a + b*x)^4*Gamma[4/n, -(c*(a + b*x)^n*Log[f])])/(b^4*n*(-(c*(
a + b*x)^n*Log[f]))^(4/n))) + (3*a*(a + b*x)^3*Gamma[3/n, -(c*(a
+ b*x)^n*Log[f])])/(b^4*n*(-(c*(a + b*x)^n*Log[f]))^(3/n)) - (3*a
^2*(a + b*x)^2*Gamma[2/n, -(c*(a + b*x)^n*Log[f])])/(b^4*n*(-(c*(
a + b*x)^n*Log[f]))^(2/n)) + (a^3*(a + b*x)*Gamma[n^(-1), -(c*(a
+ b*x)^n*Log[f])])/(b^4*n*(-(c*(a + b*x)^n*Log[f]))^n^(-1))
```

Rubi [A] time = 0.279479, antiderivative size = 207, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{a^3(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{b^4n} - \frac{3a^2(a+bx)^2\left(-c\log(f)(a+bx)^n\right)^{-2/n}\text{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)}{b^4n} - \frac{(a+bx)^4\left(-c\log(f)(a+bx)^n\right)^{-4/n}\text{Gamma}\left(\frac{4}{n},-c\log(f)(a+bx)^n\right)}{b^4n} + \frac{3a(a+bx)^3\left(-c\log(f)(a+bx)^n\right)^{-3/n}\text{Gamma}\left(\frac{3}{n},-c\log(f)(a+bx)^n\right)}{b^4n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^n)*x^3,x]
```

```
[Out] -(((a + b*x)^4*Gamma[4/n, -(c*(a + b*x)^n*Log[f])])/(b^4*n*(-(c*(
a + b*x)^n*Log[f]))^(4/n))) + (3*a*(a + b*x)^3*Gamma[3/n, -(c*(a
+ b*x)^n*Log[f])])/(b^4*n*(-(c*(a + b*x)^n*Log[f]))^(3/n)) - (3*a
^2*(a + b*x)^2*Gamma[2/n, -(c*(a + b*x)^n*Log[f])])/(b^4*n*(-(c*(
a + b*x)^n*Log[f]))^(2/n)) + (a^3*(a + b*x)*Gamma[n^(-1), -(c*(a
+ b*x)^n*Log[f])])/(b^4*n*(-(c*(a + b*x)^n*Log[f]))^n^(-1))
```

Rubi in Sympy [A] time = 28.2801, size = 192, normalized size = 0.93

$$\frac{a^3\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{1}{n}}\left(a+bx\right)\left(\frac{1}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^4n} - \frac{3a^2\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{2}{n}}\left(a+bx\right)^2\left(\frac{2}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^4n} + \frac{3a\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{3}{n}}\left(a+bx\right)^3\left(\frac{3}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^4n} - \frac{\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{4}{n}}\left(a+bx\right)^4\left(\frac{4}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^4n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**n)*x**3,x)
```

```
[Out] a**3*(-c*(a + b*x)**n*log(f))**(-1/n)*(a + b*x)*Gamma(1/n, -c*(a
+ b*x)**n*log(f))/(b**4*n) - 3*a**2*(-c*(a + b*x)**n*log(f))**(-2
/n)*(a + b*x)**2*Gamma(2/n, -c*(a + b*x)**n*log(f))/(b**4*n) + 3*
a*(-c*(a + b*x)**n*log(f))**(-3/n)*(a + b*x)**3*Gamma(3/n, -c*(a
+ b*x)**n*log(f))/(b**4*n) - (-c*(a + b*x)**n*log(f))**(-4/n)*(a
+ b*x)**4*Gamma(4/n, -c*(a + b*x)**n*log(f))/(b**4*n)
```

Mathematica [A] time = 4.2012, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^n} x^3 \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^n)*x^3,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^n)*x^3, x]
```

Maple [F] time = 0.023, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^n} x^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^n)*x^3,x)
```

```
[Out] int(f^(c*(b*x+a)^n)*x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c} x^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^3,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^n*c)*x^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{(bx+a)^n c} x^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^3,x, algorithm="fricas")
```

```
[Out] integral(f^((b*x + a)^n*c)*x^3, x)
```

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

$$\int f^{c(a+bx)^n}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)*x**3,x)
```

```
[Out] Integral(f**(c*(a + b*x)**n)*x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^3,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^n*c)*x^3, x)
```

3.248 $\int f^{c(a+bx)^n} x^2 \, dx$

Optimal. Leaf size=154

$$-\frac{a^2(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\operatorname{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{b^3n}-\frac{(a+bx)^3\left(-c\log(f)(a+bx)^n\right)^{-3/n}\operatorname{Gamma}\left(\frac{3}{n},-c\log(f)(a+bx)^n\right)}{b^3n}+\frac{2a(a+bx)^2\left(-c\log(f)(a+bx)^n\right)^{-2/n}\operatorname{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)}{b^3n}$$

```
[Out] -(((a + b*x)^3*Gamma[3/n, -(c*(a + b*x)^n*Log[f])])/(b^3*n*(-(c*(
a + b*x)^n*Log[f]))^(3/n))) + (2*a*(a + b*x)^2*Gamma[2/n, -(c*(a
+ b*x)^n*Log[f])])/(b^3*n*(-(c*(a + b*x)^n*Log[f]))^(2/n)) - (a^2
*(a + b*x)*Gamma[n^(-1), -(c*(a + b*x)^n*Log[f])])/(b^3*n*(-(c*(a
 + b*x)^n*Log[f]))^n^(-1))
```

Rubi [A] time = 0.193636, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{a^2(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\operatorname{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{b^3n}-\frac{(a+bx)^3\left(-c\log(f)(a+bx)^n\right)^{-3/n}\operatorname{Gamma}\left(\frac{3}{n},-c\log(f)(a+bx)^n\right)}{b^3n}+\frac{2a(a+bx)^2\left(-c\log(f)(a+bx)^n\right)^{-2/n}\operatorname{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)}{b^3n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^n)*x^2,x]
```

```
[Out] -(((a + b*x)^3*Gamma[3/n, -(c*(a + b*x)^n*Log[f])])/(b^3*n*(-(c*(
a + b*x)^n*Log[f]))^(3/n))) + (2*a*(a + b*x)^2*Gamma[2/n, -(c*(a
+ b*x)^n*Log[f])])/(b^3*n*(-(c*(a + b*x)^n*Log[f]))^(2/n)) - (a^2
*(a + b*x)*Gamma[n^(-1), -(c*(a + b*x)^n*Log[f])])/(b^3*n*(-(c*(a
 + b*x)^n*Log[f]))^n^(-1))
```

Rubi in Sympy [A] time = 19.5003, size = 141, normalized size = 0.92

$$-\frac{a^2\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{1}{n}}\left(a+bx\right)\left(\frac{1}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^3n}+\frac{2a\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{2}{n}}\left(a+bx\right)^2\left(\frac{2}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^3n}-\frac{\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{3}{n}}\left(a+bx\right)^3\left(\frac{3}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^3n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**n)*x**2,x)
```

```
[Out] -a**2*(-c*(a + b*x)**n*log(f))**(-1/n)*(a + b*x)*Gamma(1/n, -c*(a
 + b*x)**n*log(f))/(b**3*n) + 2*a*(-c*(a + b*x)**n*log(f))**(-2/n
)*(a + b*x)**2*Gamma(2/n, -c*(a + b*x)**n*log(f))/(b**3*n) - (-c*
(a + b*x)**n*log(f))**(-3/n)*(a + b*x)**3*Gamma(3/n, -c*(a + b*x)
**n*log(f))/(b**3*n)
```

Mathematica [A] time = 3.86622, size = 0, normalized size = 0.

$$\int f^{c(a+bx)^n}x^2\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^n)*x^2,x]

[Out] Integrate[f^(c*(a + b*x)^n)*x^2, x]
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^n}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^n)*x^2,x)

[Out] int(f^(c*(b*x+a)^n)*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^2,x, algorithm="maxima")

[Out] integrate(f^((b*x + a)^n*c)*x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{(bx+a)^n c}x^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^2,x, algorithm="fricas")

[Out] integral(f^((b*x + a)^n*c)*x^2, x)
```

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

$$\int f^{c(a+bx)^n}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)*x**2,x)

[Out] Integral(f**(c*(a + b*x)**n)*x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x^2,x, algorithm="giac")

[Out] integrate(f^((b*x + a)^n*c)*x^2, x)
```

3.249 $\int f^{c(a+bx)^n} x \, dx$

Optimal. Leaf size=99

$$\frac{a(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\operatorname{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{b^2n} - \frac{(a+bx)^2\left(-c\log(f)(a+bx)^n\right)^{-2/n}\operatorname{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)}{b^2n}$$

```
[Out] -(((a + b*x)^2*Gamma[2/n, -(c*(a + b*x)^n*Log[f])])/(b^2*n*(-(c*(
a + b*x)^n*Log[f]))^(2/n))) + (a*(a + b*x)*Gamma[n^(-1), -(c*(a +
 b*x)^n*Log[f])])/(b^2*n*(-(c*(a + b*x)^n*Log[f]))^n^(-1))
```

Rubi [A] time = 0.102659, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{a(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\operatorname{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{b^2n} - \frac{(a+bx)^2\left(-c\log(f)(a+bx)^n\right)^{-2/n}\operatorname{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)}{b^2n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^n)*x,x]
```

```
[Out] -(((a + b*x)^2*Gamma[2/n, -(c*(a + b*x)^n*Log[f])])/(b^2*n*(-(c*(
a + b*x)^n*Log[f]))^(2/n))) + (a*(a + b*x)*Gamma[n^(-1), -(c*(a +
 b*x)^n*Log[f])])/(b^2*n*(-(c*(a + b*x)^n*Log[f]))^n^(-1))
```

Rubi in Sympy [A] time = 10.2292, size = 90, normalized size = 0.91

$$\frac{a\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{1}{n}}\left(a+bx\right)\left(\frac{1}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^2n} - \frac{\left(-c\left(a+bx\right)^n\log\left(f\right)\right)^{-\frac{2}{n}}\left(a+bx\right)^2\left(\frac{2}{n},-c\left(a+bx\right)^n\log\left(f\right)\right)}{b^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**n)*x,x)
```

```
[Out] a*(-c*(a + b*x)**n*log(f))**(-1/n)*(a + b*x)*Gamma(1/n, -c*(a + b
*x)**n*log(f))/(b**2*n) - (-c*(a + b*x)**n*log(f))**(-2/n)*(a + b
*x)**2*Gamma(2/n, -c*(a + b*x)**n*log(f))/(b**2*n)
```

Mathematica [A] time = 0.242563, size = 91, normalized size = 0.92

$$-\frac{(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-2/n}\left((a+bx)\operatorname{Gamma}\left(\frac{2}{n},-c\log(f)(a+bx)^n\right)-a\left(-c\log(f)(a+bx)^n\right)^{\frac{1}{n}}\operatorname{Gamma}\left(\frac{1}{n},-c\log(\right.\right.}{b^2n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c*(a + b*x)^n)*x,x]
```

```
[Out] -(((a + b*x)*((a + b*x)*Gamma[2/n, -(c*(a + b*x)^n*Log[f])] - a*G
amma[n^(-1), -(c*(a + b*x)^n*Log[f])]*(-(c*(a + b*x)^n*Log[f]))^n
^(-1)))/(b^2*n*(-(c*(a + b*x)^n*Log[f]))^(2/n)))
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^n} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^n)*x,x)
```

```
[Out] int(f^(c*(b*x+a)^n)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^n*c)*x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{(bx+a)^n c} x, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x,x, algorithm="fricas")
```

```
[Out] integral(f^((b*x + a)^n*c)*x, x)
```

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

$$\int f^{c(a+bx)^n} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)*x,x)
```

```
[Out] Integral(f**(c*(a + b*x)**n)*x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)*x,x, algorithm="giac")

[Out] integrate(f^((b*x + a)^n*c)*x, x)
```

3.250 $\int f^{c(a+bx)^n}\,dx$

Optimal. Leaf size=47

$$-\frac{(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{bn}$$

```
[Out] -(((a + b*x)*Gamma[n^(-1), -(c*(a + b*x)^n*Log[f])])/(b*n*(-(c*(a
 + b*x)^n*Log[f]))^n^(-1)))
```

Rubi [A] time = 0.017441, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(c*(a + b*x)^n),x]
```

```
[Out] -(((a + b*x)*Gamma[n^(-1), -(c*(a + b*x)^n*Log[f])])/(b*n*(-(c*(a
 + b*x)^n*Log[f]))^n^(-1)))
```

Rubi in Sympy [A] time = 2.03448, size = 42, normalized size = 0.89

$$-\frac{\left(-c\left(a+bx\right)^{n}\log\left(f\right)\right)^{-\frac{1}{n}}\left(a+bx\right)\left(\frac{1}{n},-c\left(a+bx\right)^{n}\log\left(f\right)\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**n),x)
```

```
[Out] -(-c*(a + b*x)**n*log(f))**(-1/n)*(a + b*x)*Gamma(1/n, -c*(a + b*
x)**n*log(f))/(b*n)
```

Mathematica [A] time = 0.0112775, size = 47, normalized size = 1.

$$-\frac{(a+bx)\left(-c\log(f)(a+bx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-c\log(f)(a+bx)^n\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(c*(a + b*x)^n),x]
```

```
[Out] -(((a + b*x)*Gamma[n^(-1), -(c*(a + b*x)^n*Log[f])])/(b*n*(-(c*(a
 + b*x)^n*Log[f]))^n^(-1)))
```

Maple [F] time = 0.028, size = 0, normalized size = 0.

$$\int f^{c(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^n),x)

[Out] int(f^(c*(b*x+a)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c),x, algorithm="maxima")

[Out] integrate(f^((b*x + a)^n*c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{(bx+a)^n c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c),x, algorithm="fricas")

[Out] integral(f^((b*x + a)^n*c), x)
```

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

$$\int f^{c(a+bx)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n),x)

[Out] Integral(f**(c*(a + b*x)**n), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(bx+a)^n c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c),x, algorithm="giac")

[Out] integrate(f^((b*x + a)^n*c), x)
```

3.251 $\int \frac{f^{c(a+bx)^n}}{x} dx$

Optimal. Leaf size=18

$$\operatorname{Int}\left(\frac{f^{c(a+bx)^n}}{x}, x\right)$$

```
[Out] Unintegrable[f^(c*(a + b*x)^n)/x, x]
```

Rubi [A] time = 0.0332152, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\operatorname{Int}\left(\frac{f^{c(a+bx)^n}}{x}, x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f^(c*(a + b*x)^n)/x,x]
```

```
[Out] Defer[Int][f^(c*(a + b*x)^n)/x, x]
```

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

$$\int \frac{f^{c(a+bx)^n}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*(b*x+a)**n)/x,x)
```

```
[Out] Integral(f**(c*(a + b*x)**n)/x, x)
```

Mathematica [A] time = 0.0352884, size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^n}}{x} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f^(c*(a + b*x)^n)/x,x]
```

```
[Out] Integrate[f^(c*(a + b*x)^n)/x, x]
```

Maple [A] time = 0.021, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^n}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(f^(c*(b*x+a)^n)/x,x)
```

```
[Out] int(f^(c*(b*x+a)^n)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^n c}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^n*c)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{(bx+a)^n c}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x,x, algorithm="fricas")
```

```
[Out] integral(f^((b*x + a)^n*c)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^n}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)/x,x)
```

```
[Out] Integral(f**(c*(a + b*x)**n)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^n c}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^n*c)/x, x)
```

3.252 $\int \frac{f^{c(a+bx)^n}}{x^2} dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{c(a+bx)^n}}{x^2},x\right)$$

```
[Out] CannotIntegrate[f^(c*(a + b*x)^n)/x^2, x]
```

Rubi [A] time = 0.0700657, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{c(a+bx)^n}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^n)/x^2,x]

[Out] Defer[Int][f^(c*(a + b*x)^n)/x^2, x]
```

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

$$\int \frac{f^{c(a+bx)^n}}{x^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**n)/x**2,x)

[Out] Integral(f**(c*(a + b*x)**n)/x**2, x)
```

Mathematica [A] time = 0.0328274, size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^n}}{x^2} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^n)/x^2,x]

[Out] Integrate[f^(c*(a + b*x)^n)/x^2, x]
```

Maple [A] time = 0.061, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^n}}{x^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^n)/x^2,x)
```

```
[Out] int(f^(c*(b*x+a)^n)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^n c}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^n*c)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{(bx+a)^n c}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x^2,x, algorithm="fricas")
```

```
[Out] integral(f^((b*x + a)^n*c)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^n}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)/x**2,x)
```

```
[Out] Integral(f**(c*(a + b*x)**n)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^n c}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x^2,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^n*c)/x^2, x)
```

3.253 $\int \frac{f^{c(a+bx)^n}}{x^3} dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{f^{c(a+bx)^n}}{x^3},x\right)$$

```
[Out] CannotIntegrate[f^(c*(a + b*x)^n)/x^3, x]
```

Rubi [A] time = 0.0692277, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{f^{c(a+bx)^n}}{x^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(c*(a + b*x)^n)/x^3,x]

[Out] Defer[Int][f^(c*(a + b*x)^n)/x^3, x]
```

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

$$\int \frac{f^{c(a+bx)^n}}{x^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*(b*x+a)**n)/x**3,x)

[Out] Integral(f**(c*(a + b*x)**n)/x**3, x)
```

Mathematica [A] time = 0.0365737, size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^n}}{x^3} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(c*(a + b*x)^n)/x^3,x]

[Out] Integrate[f^(c*(a + b*x)^n)/x^3, x]
```

Maple [A] time = 0.02, size = 0, normalized size = 0.

$$\int \frac{f^{c(bx+a)^n}}{x^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*(b*x+a)^n)/x^3,x)
```

```
[Out] int(f^(c*(b*x+a)^n)/x^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^n c}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x^3,x, algorithm="maxima")
```

```
[Out] integrate(f^((b*x + a)^n*c)/x^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{(bx+a)^n c}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x^3,x, algorithm="fricas")
```

```
[Out] integral(f^((b*x + a)^n*c)/x^3, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c(a+bx)^n}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*(b*x+a)**n)/x**3,x)
```

```
[Out] Integral(f**(c*(a + b*x)**n)/x**3, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{(bx+a)^n c}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((b*x + a)^n*c)/x^3,x, algorithm="giac")
```

```
[Out] integrate(f^((b*x + a)^n*c)/x^3, x)
```

3.254 $\int F^{a+b(c+dx)^2}(c+dx)^m\,dx$

Optimal. Leaf size=61

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^2\right)^{\frac{1}{2}(-m-1)}\operatorname{Gamma}\left(\frac{m+1}{2},-b\log(F)(c+dx)^2\right)}{2d}$$

```
[Out] -(F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/2, -(b*(c + d*x)^2*Log[F])]
*(-(b*(c + d*x)^2*Log[F]))^((-1 - m)/2))/(2*d)
```

Rubi [A] time = 0.105459, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^2\right)^{\frac{1}{2}(-m-1)}\operatorname{Gamma}\left(\frac{m+1}{2},-b\log(F)(c+dx)^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^m,x]
```

```
[Out] -(F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/2, -(b*(c + d*x)^2*Log[F])]
*(-(b*(c + d*x)^2*Log[F]))^((-1 - m)/2))/(2*d)
```

Rubi in Sympy [A] time = 5.48506, size = 58, normalized size = 0.95

$$-\frac{F^a\left(-b\left(c+dx\right)^2\log\left(F\right)\right)^{-\frac{m}{2}-\frac{1}{2}}\left(c+dx\right)^{m+1}\left(\frac{m}{2}+\frac{1}{2},-b\left(c+dx\right)^2\log\left(F\right)\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**m,x)
```

```
[Out] -F**a*(-b*(c + d*x)**2*log(F))**(-m/2 - 1/2)*(c + d*x)**(m + 1)*G
amma(m/2 + 1/2, -b*(c + d*x)**2*log(F))/(2*d)
```

Mathematica [A] time = 0.0626783, size = 61, normalized size = 1.

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^2\right)^{\frac{1}{2}(-m-1)}\operatorname{Gamma}\left(\frac{m+1}{2},-b\log(F)(c+dx)^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^m,x]
```

```
[Out] -(F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/2, -(b*(c + d*x)^2*Log[F])]
*(-(b*(c + d*x)^2*Log[F]))^((-1 - m)/2))/(2*d)
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^2}\left(dx+c\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^m,x)

[Out] int(F^(a+b*(d*x+c)^2)*(d*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)^m F^{(dx+c)^2 b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^2*b + a),x, algorithm="maxima")

[Out] integrate((d*x + c)^m*F^((d*x + c)^2*b + a), x)
```

Fricas [A] time = 0.261786, size = 80, normalized size = 1.31

$$\frac{e^{\left(-\frac{1}{2}\,(m-1)\log(-b\log(F))+a\log(F)\right)}\,\Gamma\left(\frac{1}{2}\,m+\frac{1}{2}, -\left(bd^2x^2+2\,bcdx+bc^2\right)\log(F)\right)}{2\,bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^2*b + a),x, algorithm="fricas")

[Out] 1/2*e^(-1/2*(m - 1)*log(-b*log(F)) + a*log(F))*gamma(1/2*m + 1/2,
 -(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F))/(b*d*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**m,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)^m F^{(dx+c)^2 b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^2*b + a),x, algorithm="giac")

[Out] integrate((d*x + c)^m*F^((d*x + c)^2*b + a), x)
```

3.255 $\int F^{a+b(c+dx)^2}(c+dx)^{11}\,dx$

Optimal. Leaf size=31

$$-\frac{F^a\text{Gamma}\left(6,-b\log(F)(c+dx)^2\right)}{2b^6d\log^6(F)}$$

```
[Out] -(F^a*Gamma[6, -(b*(c + d*x)^2*Log[F])])/(2*b^6*d*Log[F]^6)
```

Rubi [A] time = 0.110824, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\text{Gamma}\left(6,-b\log(F)(c+dx)^2\right)}{2b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^11,x]
```

```
[Out] -(F^a*Gamma[6, -(b*(c + d*x)^2*Log[F])])/(2*b^6*d*Log[F]^6)
```

Rubi in Sympy [A] time = 6.01587, size = 31, normalized size = 1.

$$-\frac{F^a\left(6,-b\left(c+dx\right)^2\log\left(F\right)\right)}{2b^6d\log\left(F\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**11,x)
```

```
[Out] -F**a*Gamma(6, -b*(c + d*x)**2*log(F))/(2*b**6*d*log(F)**6)
```

Mathematica [B] time = 0.08941, size = 104, normalized size = 3.35

$$\frac{F^{a+b(c+dx)^2}\left(b^5\log^5(F)(c+dx)^{10}-5b^4\log^4(F)(c+dx)^8+20b^3\log^3(F)(c+dx)^6-60b^2\log^2(F)(c+dx)^4+120b\log(F)(c+dx\right.}{2b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^11,x]
```

```
[Out] (F^(a + b*(c + d*x)^2)*(-120 + 120*b*(c + d*x)^2*Log[F] - 60*b^2*
(c + d*x)^4*Log[F]^2 + 20*b^3*(c + d*x)^6*Log[F]^3 - 5*b^4*(c + d
*x)^8*Log[F]^4 + b^5*(c + d*x)^10*Log[F]^5))/(2*b^6*d*Log[F]^6)
```

Maple [B] time = 0.03, size = 579, normalized size = 18.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^11,x)
```

```
[Out] 1/2*(-120+120*ln(F)*b*c^2+120*ln(F)*b*d^2*x^2-5*ln(F)^4*b^4*c^8+2
40*ln(F)*b*c*d*x+d^10*x^10*b^5*ln(F)^5-5*d^8*x^8*b^4*ln(F)^4+20*d
^6*x^6*b^3*ln(F)^3-60*d^4*x^4*b^2*ln(F)^2-60*ln(F)^2*b^2*c^4+20*l
n(F)^3*b^3*c^6+ln(F)^5*b^5*c^10+400*ln(F)^3*b^3*c^3*d^3*x^3+300*l
n(F)^3*b^3*c^4*d^2*x^2+120*ln(F)^3*b^3*c^5*d*x-240*d^3*c*x^3*b^2*
ln(F)^2-360*ln(F)^2*b^2*c^2*d^2*x^2-240*ln(F)^2*b^2*c^3*d*x+210*l
n(F)^5*b^5*c^6*d^4*x^4+120*ln(F)^5*b^5*c^7*d^3*x^3-40*c*d^7*x^7*b
^4*ln(F)^4+45*ln(F)^5*b^5*c^8*d^2*x^2-140*ln(F)^4*b^4*c^2*d^6*x^6
+10*ln(F)^5*b^5*c^9*d*x-280*ln(F)^4*b^4*c^3*d^5*x^5-350*ln(F)^4*b
^4*c^4*d^4*x^4-280*ln(F)^4*b^4*c^5*d^3*x^3-140*ln(F)^4*b^4*c^6*d^
2*x^2-40*ln(F)^4*b^4*c^7*d*x+120*c*d^5*x^5*b^3*ln(F)^3+300*ln(F)^
3*b^3*c^2*d^4*x^4+10*d^9*c*x^9*b^5*ln(F)^5+45*ln(F)^5*b^5*c^2*d^8
*x^8+120*ln(F)^5*b^5*c^3*d^7*x^7+210*ln(F)^5*b^5*c^4*d^6*x^6+252*
ln(F)^5*b^5*c^5*d^5*x^5)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)/b^6/ln(F
)^6/d
```

Maxima [A] time = 1.70769, size = 8798, normalized size = 283.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -11/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((
b*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^10*d/(sqrt(b
*d^2*log(F))*F^(b*c^2)) + 55/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*
log(F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*lo
g(F))^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2
)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(
b*c^2 + a)*c^9*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 165/2*(sqrt(p
i)*(b*d^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2
*log(F))^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))) - 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log
(F))^(7/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2,
 -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^
2*log(F))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))^(3/2)))*F^(b*c^2 + a)*c^8*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) +
 165*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(s
qrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(
F)^4/((b*d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^
5*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)^3/(b*d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*
b^2*c^2*d^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))*log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d
*log(F))^2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F
))^5*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))^(5/2)))*F^(b*c^2 + a)*c^7*d^4/(sqrt(b*d^2*log(F))*F^(b
*c^2)) - 231*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^
5*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
 1)*log(F)^5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d
*log(F))^2/(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) +
```

```
b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) +
10*b^4*c^2*d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b
*c*d*log(F))^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma
(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(
b*d^2*log(F))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*
gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))^(5/2)))*F^(b*c^2 + a)*c^6*d^5/(sqrt(b*d^2*log(F))*F
^(b*c^2)) + 231*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6
*d^6*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
) - 1)*log(F)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2)
 + 20*b^5*c^3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F)
+ b*c*d*log(F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d
*log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^
7*gamma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)^4/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(F))^
5*b^2*c^2*d^2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*lo
g(F))^7*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))^(7/2)))*F^(b*c^2 + a)*c^5*d^6/(sqrt(b*d^2*log(F))*
F^(b*c^2)) - 165*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^7*c^
7*d^7*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)) - 1)*log(F)^7/((b*d^2*log(F))^(15/2)*sqrt(-(b*d^2*x*log(F) + b
*c*d*log(F))^2/(b*d^2*log(F)))) - 7*b^7*c^6*d^8*e^((b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(15/2
) + 35*b^6*c^4*d^8*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(15/2) - 21*(b*d^2*x*log(F)
 + b*c*d*log(F))^3*b^5*c^5*d^5*gamma(3/2, -(b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(15/2)*(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 21*b^5*c^
2*d^8*gamma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^5/(b*d^2*log(F))^(15/2) + b^4*d^8*gamma(4, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(15/
2) - 35*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^3*c^3*d^3*gamma(5/2,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d
^2*log(F))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))^(5/2)) - 7*(b*d^2*x*log(F) + b*c*d*log(F))^7*b*c*d*gamma(7/2
, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d
^2*log(F))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))^(7/2)))*F^(b*c^2 + a)*c^4*d^7/(sqrt(b*d^2*log(F))*F^(b*c^2))
 + 165/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^8*c^8*d^8*(e
rf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*
log(F)^8/((b*d^2*log(F))^(17/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))) - 8*b^8*c^7*d^9*e^((b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(17/2) + 56*b
^7*c^5*d^9*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)^7/(b*d^2*log(F))^(17/2) - 28*(b*d^2*x*log(F) + b*c*d
*log(F))^3*b^6*c^6*d^6*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))*log(F)^6/((b*d^2*log(F))^(17/2)*(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 56*b^6*c^3*d^9*ga
mma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^
6/(b*d^2*log(F))^(17/2) + 8*b^5*c*d^9*gamma(4, -(b*d^2*x*log(F) +
 b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(17/2) -
 70*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^4*c^4*d^4*gamma(5/2, -(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*l
og(F))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
^(5/2)) - 28*(b*d^2*x*log(F) + b*c*d*log(F))^7*b^2*c^2*d^2*gamma(
7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/
((b*d^2*log(F))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))^(7/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^9*gamma(9/2, -
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))
^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)
))*F^(b*c^2 + a)*c^3*d^8/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 55/2*(s
```

```
qrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^9*c^9*d^9*(erf(sqrt(-(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^9/((
b*d^2*log(F))^(19/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))) - 9*b^9*c^8*d^10*e^((b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))*log(F)^9/(b*d^2*log(F))^(19/2) + 84*b^8*c^6*d^1
0*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)^8/(b*d^2*log(F))^(19/2) - 36*(b*d^2*x*log(F) + b*c*d*log(F))^
3*b^7*c^7*d^7*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^7/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 126*b^7*c^4*d^10*gamma(3,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^
2*log(F))^(19/2) + 36*b^6*c^2*d^10*gamma(4, -(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(19/2) - 12
6*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^5*c^5*d^5*gamma(5/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log
(F))^(19/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(
5/2)) - b^5*d^10*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))*log(F)^5/(b*d^2*log(F))^(19/2) - 84*(b*d^2*x*log(F) +
 b*c*d*log(F))^7*b^3*c^3*d^3*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(19/2)*(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 9*(b*d^2*x*
log(F) + b*c*d*log(F))^9*b*c*d*gamma(9/2, -(b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^(19/2)*(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c^2 + a
)*c^2*d^9/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 11/2*(sqrt(pi)*(b*d^2*
x*log(F) + b*c*d*log(F))*b^10*c^10*d^10*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^10/((b*d^2*log(F
))^(21/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
) - 10*b^10*c^9*d^11*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))*log(F)^10/(b*d^2*log(F))^(21/2) + 120*b^9*c^7*d^11*gamma
(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^9/(
b*d^2*log(F))^(21/2) - 45*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^8*c
^8*d^8*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^8/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))^(3/2)) - 252*b^8*c^5*d^11*gamma(3, -(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F
))^(21/2) + 120*b^7*c^3*d^11*gamma(4, -(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(21/2) - 210*(b*d
^2*x*log(F) + b*c*d*log(F))^5*b^6*c^6*d^6*gamma(5/2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/((b*d^2*log(F))^(
21/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2))
- 10*b^6*c*d^11*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^6/(b*d^2*log(F))^(21/2) - 210*(b*d^2*x*log(F) +
 b*c*d*log(F))^7*b^4*c^4*d^4*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(21/2)*(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 45*(b*d^2*x
*log(F) + b*c*d*log(F))^9*b^2*c^2*d^2*gamma(9/2, -(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/((b*d^2*log(F))^(21/2
)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)) - (b
*d^2*x*log(F) + b*c*d*log(F))^11*gamma(11/2, -(b*d^2*x*log(F) + b
*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(11/2)))*F^(b*c^2 + a)*c
*d^10/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 1/2*(sqrt(pi)*(b*d^2*x*log
(F) + b*c*d*log(F))*b^11*c^11*d^11*(erf(sqrt(-(b*d^2*x*log(F) + b
*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^11/((b*d^2*log(F))^(2
3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1
1*b^11*c^10*d^12*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)^11/(b*d^2*log(F))^(23/2) + 165*b^10*c^8*d^12*gamma(2,
 -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^10/(b*
d^2*log(F))^(23/2) - 55*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^9*c^9
*d^9*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^9/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))^(3/2)) - 462*b^9*c^6*d^12*gamma(3, -(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^9/(b*d^2*log(F))
^(23/2) + 330*b^8*c^4*d^12*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(
F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(23/2) - 330*(b*d^2
*x*log(F) + b*c*d*log(F))^5*b^7*c^7*d^7*gamma(5/2, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/((b*d^2*log(F))^(23
/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) -
55*b^7*c^2*d^12*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^7/(b*d^2*log(F))^(23/2) + b^6*d^12*gamma(6, -(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*l
```

```
og(F))^(23/2) - 462*(b*d^2*x*log(F) + b*c*d*log(F))^7*b^5*c^5*d^5
*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*lo
g(F)^5/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))^(7/2)) - 165*(b*d^2*x*log(F) + b*c*d*log(F))^9*b
^3*c^3*d^3*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))*log(F)^3/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d
*log(F))^2/(b*d^2*log(F)))^(9/2)) - 11*(b*d^2*x*log(F) + b*c*d*lo
g(F))^11*b*c*d*gamma(11/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))^(11/2)))*F^(b*c^2 + a)*d^11/(sqrt(b
*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)*c^11*erf(sqr
t(-b*log(F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(-b*log(F))*F
^(b*c^2)*d)
```

Fricas [A] time = 0.276784, size = 632, normalized size = 20.39

$$\frac{\left(\left(b^5d^{10}x^{10} + 10\,b^5cd^9x^9 + 45\,b^5c^2d^8x^8 + 120\,b^5c^3d^7x^7 + 210\,b^5c^4d^6x^6 + 252\,b^5c^5d^5x^5 + 210\,b^5c^6d^4x^4 + 120\,b^5c^7d^3x^3 + 45\,b^5\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*((b^5*d^10*x^10 + 10*b^5*c*d^9*x^9 + 45*b^5*c^2*d^8*x^8 + 120
*b^5*c^3*d^7*x^7 + 210*b^5*c^4*d^6*x^6 + 252*b^5*c^5*d^5*x^5 + 21
0*b^5*c^6*d^4*x^4 + 120*b^5*c^7*d^3*x^3 + 45*b^5*c^8*d^2*x^2 + 10
*b^5*c^9*d*x + b^5*c^10)*log(F)^5 - 5*(b^4*d^8*x^8 + 8*b^4*c*d^7*
x^7 + 28*b^4*c^2*d^6*x^6 + 56*b^4*c^3*d^5*x^5 + 70*b^4*c^4*d^4*x^
4 + 56*b^4*c^5*d^3*x^3 + 28*b^4*c^6*d^2*x^2 + 8*b^4*c^7*d*x + b^4
*c^8)*log(F)^4 + 20*(b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d
^4*x^4 + 20*b^3*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x
+ b^3*c^6)*log(F)^3 - 60*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c
^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*log(F)^2 + 120*(b*d^2*x^2 +
 2*b*c*d*x + b*c^2)*log(F) - 120)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^
2 + a)/(b^6*d*log(F)^6)
```

Sympy [A] time = 1.25795, size = 796, normalized size = 25.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**11,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**2)*(b**5*c**10*log(F)**5 + 10*b**
5*c**9*d*x*log(F)**5 + 45*b**5*c**8*d**2*x**2*log(F)**5 + 120*b**
5*c**7*d**3*x**3*log(F)**5 + 210*b**5*c**6*d**4*x**4*log(F)**5 +
252*b**5*c**5*d**5*x**5*log(F)**5 + 210*b**5*c**4*d**6*x**6*log(F
)**5 + 120*b**5*c**3*d**7*x**7*log(F)**5 + 45*b**5*c**2*d**8*x**8
*log(F)**5 + 10*b**5*c*d**9*x**9*log(F)**5 + b**5*d**10*x**10*log
(F)**5 - 5*b**4*c**8*log(F)**4 - 40*b**4*c**7*d*x*log(F)**4 - 140
*b**4*c**6*d**2*x**2*log(F)**4 - 280*b**4*c**5*d**3*x**3*log(F)**
4 - 350*b**4*c**4*d**4*x**4*log(F)**4 - 280*b**4*c**3*d**5*x**5*l
og(F)**4 - 140*b**4*c**2*d**6*x**6*log(F)**4 - 40*b**4*c*d**7*x**
7*log(F)**4 - 5*b**4*d**8*x**8*log(F)**4 + 20*b**3*c**6*log(F)**3
 + 120*b**3*c**5*d*x*log(F)**3 + 300*b**3*c**4*d**2*x**2*log(F)**
3 + 400*b**3*c**3*d**3*x**3*log(F)**3 + 300*b**3*c**2*d**4*x**4*l
og(F)**3 + 120*b**3*c*d**5*x**5*log(F)**3 + 20*b**3*d**6*x**6*log
(F)**3 - 60*b**2*c**4*log(F)**2 - 240*b**2*c**3*d*x*log(F)**2 - 3
60*b**2*c**2*d**2*x**2*log(F)**2 - 240*b**2*c*d**3*x**3*log(F)**2
 - 60*b**2*d**4*x**4*log(F)**2 + 120*b*c**2*log(F) + 240*b*c*d*x*
log(F) + 120*b*d**2*x**2*log(F) - 120)/(2*b**6*d*log(F)**6), Ne(2
```

```
*b**6*d*log(F)**6, 0)), (c**11*x + 11*c**10*d*x**2/2 + 55*c**9*d*
*2*x**3/3 + 165*c**8*d**3*x**4/4 + 66*c**7*d**4*x**5 + 77*c**6*d*
*5*x**6 + 66*c**5*d**6*x**7 + 165*c**4*d**7*x**8/4 + 55*c**3*d**8
*x**9/3 + 11*c**2*d**9*x**10/2 + c*d**10*x**11 + d**11*x**12/12,
True))
```

GIAC/XCAS [A] time = 0.249285, size = 196, normalized size = 6.32

$$\frac{\left(b^5 d^{10}\left(x+\frac{c}{d}\right)^{10}\ln(F)^5-5\,b^4 d^8\left(x+\frac{c}{d}\right)^8\ln(F)^4+20\,b^3 d^6\left(x+\frac{c}{d}\right)^6\ln(F)^3-60\,b^2 d^4\left(x+\frac{c}{d}\right)^4\ln(F)^2+120\,b d^2\left(x+\frac{c}{d}\right)^2\ln(F)\right.}{2\,b^6 d\ln(F)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/2*(b^5*d^10*(x + c/d)^10*ln(F)^5 - 5*b^4*d^8*(x + c/d)^8*ln(F)^
4 + 20*b^3*d^6*(x + c/d)^6*ln(F)^3 - 60*b^2*d^4*(x + c/d)^4*ln(F)
^2 + 120*b*d^2*(x + c/d)^2*ln(F) - 120)*e^(b*d^2*x^2*ln(F) + 2*b*
c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b^6*d*ln(F)^6)
```

3.256 $\int F^{a+b(c+dx)^2}(c+dx)^9\,dx$

Optimal. Leaf size=31

$$\frac{F^a\text{Gamma}\left(5,-b\log(F)(c+dx)^2\right)}{2b^5d\log^5(F)}$$

```
[Out] (F^a*Gamma[5, -(b*(c + d*x)^2*Log[F])])/(2*b^5*d*Log[F]^5)
```

Rubi [A] time = 0.110374, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(5,-b\log(F)(c+dx)^2\right)}{2b^5d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^9,x]
```

```
[Out] (F^a*Gamma[5, -(b*(c + d*x)^2*Log[F])])/(2*b^5*d*Log[F]^5)
```

Rubi in Sympy [A] time = 5.87305, size = 29, normalized size = 0.94

$$\frac{F^a\left(5,-b\,(c+dx)^2\log{(F)}\right)}{2b^5d\log{(F)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**9,x)
```

```
[Out] F**a*Gamma(5, -b*(c + d*x)**2*log(F))/(2*b**5*d*log(F)**5)
```

Mathematica [B] time = 0.0637502, size = 88, normalized size = 2.84

$$\frac{F^{a+b(c+dx)^2}\left(b^4\log^4(F)(c+dx)^8-4b^3\log^3(F)(c+dx)^6+12b^2\log^2(F)(c+dx)^4-24b\log(F)(c+dx)^2+24\right)}{2b^5d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^9,x]
```

```
[Out] (F^(a + b*(c + d*x)^2)*(24 - 24*b*(c + d*x)^2*Log[F] + 12*b^2*(c
+ d*x)^4*Log[F]^2 - 4*b^3*(c + d*x)^6*Log[F]^3 + b^4*(c + d*x)^8*
Log[F]^4))/(2*b^5*d*Log[F]^5)
```

Maple [B] time = 0.022, size = 396, normalized size = 12.8

$$\left(24-24\,\ln(F)\,bc^2-24\,\ln(F)\,bd^2x^2+(\ln(F))^4\,b^4c^8-48\,\ln(F)\,bcdx+d^8x^8b^4\,(\ln(F))^4-4\,d^6x^6b^3\,(\ln(F))^3+12\,d^4x^4b^2\,(\ln($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^9,x)
```

```
[Out] 1/2*(24-24*ln(F)*b*c^2-24*ln(F)*b*d^2*x^2+ln(F)^4*b^4*c^8-48*ln(F
)*b*c*d*x+d^8*x^8*b^4*ln(F)^4-4*d^6*x^6*b^3*ln(F)^3+12*d^4*x^4*b^
2*ln(F)^2+12*ln(F)^2*b^2*c^4-4*ln(F)^3*b^3*c^6-80*ln(F)^3*b^3*c^3
*d^3*x^3-60*ln(F)^3*b^3*c^4*d^2*x^2-24*ln(F)^3*b^3*c^5*d*x+48*d^3
*c*x^3*b^2*ln(F)^2+72*ln(F)^2*b^2*c^2*d^2*x^2+48*ln(F)^2*b^2*c^3*
d*x+8*c*d^7*x^7*b^4*ln(F)^4+28*ln(F)^4*b^4*c^2*d^6*x^6+56*ln(F)^4
*b^4*c^3*d^5*x^5+70*ln(F)^4*b^4*c^4*d^4*x^4+56*ln(F)^4*b^4*c^5*d^
3*x^3+28*ln(F)^4*b^4*c^6*d^2*x^2+8*ln(F)^4*b^4*c^7*d*x-24*c*d^5*x
^5*b^3*ln(F)^3-60*ln(F)^3*b^3*c^2*d^4*x^4)*F^(b*d^2*x^2+2*b*c*d*x
+b*c^2+a)/b^5/ln(F)^5/d
```

Maxima [A] time = 1.48098, size = 6249, normalized size = 201.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^9*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -9/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^8*d/(sqrt(b*d
^2*log(F))*F^(b*c^2)) + 18*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(
F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F)
)^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^
2 + a)*c^7*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 42*(sqrt(pi)*(b*d
^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F)
)^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
 - 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7
/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F
))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2
)))*F^(b*c^2 + a)*c^6*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 63*(sq
rt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((b
*d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma(
2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b
*d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2*
d^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))
^2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*gam
ma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^
2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))^(5/2)))*F^(b*c^2 + a)*c^5*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2)) -
 63*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(erf(sq
rt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F
)^5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b^4*c^
2*d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d*log(
F))^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F)
```

```
+ b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3, -(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*log
(F))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamma(5/2
, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d
^2*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))^(5/2)))*F^(b*c^2 + a)*c^4*d^5/(sqrt(b*d^2*log(F))*F^(b*c^2))
 + 42*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6*d^6*(erf(
sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log
(F)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2) + 20*b^5*
c^3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*lo
g(F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^7*gamma(3,
 -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d
^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^2*c^2*
d^2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^7*ga
mma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d
^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))^(7/2)))*F^(b*c^2 + a)*c^3*d^6/(sqrt(b*d^2*log(F))*F^(b*c^2))
 - 18*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^7*c^7*d^7*(erf(
sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log
(F)^7/((b*d^2*log(F))^(15/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))) - 7*b^7*c^6*d^8*e^((b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(15/2) + 35*b^6*
c^4*d^8*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)^6/(b*d^2*log(F))^(15/2) - 21*(b*d^2*x*log(F) + b*c*d*lo
g(F))^3*b^5*c^5*d^5*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(15/2)*(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 21*b^5*c^2*d^8*gamma
(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(
b*d^2*log(F))^(15/2) + b^4*d^8*gamma(4, -(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(15/2) - 35*(b*
d^2*x*log(F) + b*c*d*log(F))^5*b^3*c^3*d^3*gamma(5/2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^
(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2))
 - 7*(b*d^2*x*log(F) + b*c*d*log(F))^7*b*c*d*gamma(7/2, -(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^
(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2))
)*F^(b*c^2 + a)*c^2*d^7/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 9/2*(sqr
t(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^8*c^8*d^8*(erf(sqrt(-(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^8/((b*
d^2*log(F))^(17/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - 8*b^8*c^7*d^9*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(17/2) + 56*b^7*c^5*d^9*ga
mma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^
7/(b*d^2*log(F))^(17/2) - 28*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^
6*c^6*d^6*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)^6/((b*d^2*log(F))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))^(3/2)) - 56*b^6*c^3*d^9*gamma(3, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(
F))^(17/2) + 8*b^5*c*d^9*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(17/2) - 70*(b*d^2*x*
log(F) + b*c*d*log(F))^5*b^4*c^4*d^4*gamma(5/2, -(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(17/2)
*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - 28*
(b*d^2*x*log(F) + b*c*d*log(F))^7*b^2*c^2*d^2*gamma(7/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/((b*d^2*log(F
))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/
2)) - (b*d^2*x*log(F) + b*c*d*log(F))^9*gamma(9/2, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(17/2)*(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c^2 +
 a)*c*d^8/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 1/2*(sqrt(pi)*(b*d^2*x
*log(F) + b*c*d*log(F))*b^9*c^9*d^9*(erf(sqrt(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^9/((b*d^2*log(F))^(1
9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 9
*b^9*c^8*d^10*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^9/(b*d^2*log(F))^(19/2) + 84*b^8*c^6*d^10*gamma(2, -(b*d
```

```
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log
(F))^(19/2) - 36*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^7*c^7*d^7*ga
mma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F
)^7/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))^(3/2)) - 126*b^7*c^4*d^10*gamma(3, -(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(19/2)
 + 36*b^6*c^2*d^10*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(19/2) - 126*(b*d^2*x*log(F
) + b*c*d*log(F))^5*b^5*c^5*d^5*gamma(5/2, -(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(19/2)*(-(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - b^5*d^10
*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(
F)^5/(b*d^2*log(F))^(19/2) - 84*(b*d^2*x*log(F) + b*c*d*log(F))^7
*b^3*c^3*d^3*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^3/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 9*(b*d^2*x*log(F) + b*c*d*l
og(F))^9*b*c*d*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))*log(F)/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c^2 + a)*d^9/(sqrt(b*d^
2*log(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)*c^9*erf(sqrt(-b
*log(F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*
c^2)*d)
```

Fricas [A] time = 0.25177, size = 437, normalized size = 14.1

$$\left(\left(b^4d^8x^8 + 8\,b^4cd^7x^7 + 28\,b^4c^2d^6x^6 + 56\,b^4c^3d^5x^5 + 70\,b^4c^4d^4x^4 + 56\,b^4c^5d^3x^3 + 28\,b^4c^6d^2x^2 + 8\,b^4c^7dx + b^4c^8\right)\log\left(F\right)^4 - 4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^9*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*((b^4*d^8*x^8 + 8*b^4*c*d^7*x^7 + 28*b^4*c^2*d^6*x^6 + 56*b^4
*c^3*d^5*x^5 + 70*b^4*c^4*d^4*x^4 + 56*b^4*c^5*d^3*x^3 + 28*b^4*c
^6*d^2*x^2 + 8*b^4*c^7*d*x + b^4*c^8)*log(F)^4 - 4*(b^3*d^6*x^6 +
 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20*b^3*c^3*d^3*x^3 + 15*b
^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*log(F)^3 + 12*(b^2*d^4*
x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c
^4)*log(F)^2 - 24*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) + 24)*F^
(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(b^5*d*log(F)^5)
```

Sympy [A] time = 0.997536, size = 558, normalized size = 18.

$$\begin{cases} F^{a+b(c+dx)^2}\left(b^4c^8\log(F)^4+8b^4c^7dx\log(F)^4+28b^4c^6d^2x^2\log(F)^4+56b^4c^5d^3x^3\log(F)^4+70b^4c^4d^4x^4\log(F)^4+56b^4c^3d^5x^5\log(F)^4+28b^4c^2d^6x^6\log(F)^4+8b^4c\right. \\ c^9x + \frac{9c^8dx^2}{2} + 12c^7d^2x^3 + 21c^6d^3x^4 + \frac{126c^5d^4x^5}{5} + 21c^4d^5x^6 + 12c^3d^6x^7 + \frac{9c^2d^7x^8}{2} + cd^8x^9 + \frac{d^9x^{10}}{10} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**9,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**2)*(b**4*c**8*log(F)**4 + 8*b**4*
c**7*d*x*log(F)**4 + 28*b**4*c**6*d**2*x**2*log(F)**4 + 56*b**4*c
**5*d**3*x**3*log(F)**4 + 70*b**4*c**4*d**4*x**4*log(F)**4 + 56*b
**4*c**3*d**5*x**5*log(F)**4 + 28*b**4*c**2*d**6*x**6*log(F)**4 +
 8*b**4*c*d**7*x**7*log(F)**4 + b**4*d**8*x**8*log(F)**4 - 4*b**3
*c**6*log(F)**3 - 24*b**3*c**5*d*x*log(F)**3 - 60*b**3*c**4*d**2*
x**2*log(F)**3 - 80*b**3*c**3*d**3*x**3*log(F)**3 - 60*b**3*c**2*
d**4*x**4*log(F)**3 - 24*b**3*c*d**5*x**5*log(F)**3 - 4*b**3*d**6
*x**6*log(F)**3 + 12*b**2*c**4*log(F)**2 + 48*b**2*c**3*d*x*log(F
)**2 + 72*b**2*c**2*d**2*x**2*log(F)**2 + 48*b**2*c*d**3*x**3*log
(F)**2 + 12*b**2*d**4*x**4*log(F)**2 - 24*b*c**2*log(F) - 48*b*c*
```

```
d*x*log(F) - 24*b*d**2*x**2*log(F) + 24)/(2*b**5*d*log(F)**5), Ne
(2*b**5*d*log(F)**5, 0)), (c**9*x + 9*c**8*d*x**2/2 + 12*c**7*d**
2*x**3 + 21*c**6*d**3*x**4 + 126*c**5*d**4*x**5/5 + 21*c**4*d**5*
x**6 + 12*c**3*d**6*x**7 + 9*c**2*d**7*x**8/2 + c*d**8*x**9 + d**
9*x**10/10, True))
```

GIAC/XCAS [A] time = 0.226636, size = 167, normalized size = 5.39

$$\frac{\left(b^4 d^8 \left(x + \frac{c}{d}\right)^8 \ln(F)^4 - 4\, b^3 d^6 \left(x + \frac{c}{d}\right)^6 \ln(F)^3 + 12\, b^2 d^4 \left(x + \frac{c}{d}\right)^4 \ln(F)^2 - 24\, b d^2 \left(x + \frac{c}{d}\right)^2 \ln(F) + 24\right) e^{\left(b d^2 x^2 \ln(F) + 2\, b c d x \ln(F) + b\right.}}{2\, b^5 d \ln(F)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^9*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/2*(b^4*d^8*(x + c/d)^8*ln(F)^4 - 4*b^3*d^6*(x + c/d)^6*ln(F)^3
+ 12*b^2*d^4*(x + c/d)^4*ln(F)^2 - 24*b*d^2*(x + c/d)^2*ln(F) + 2
4)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/
(b^5*d*ln(F)^5)
```

3.257 $\int F^{a+b(c+dx)^2}(c+dx)^7\,dx$

Optimal. Leaf size=126

$$-\frac{3F^{a+b(c+dx)^2}}{b^4d\log^4(F)}+\frac{3(c+dx)^2F^{a+b(c+dx)^2}}{b^3d\log^3(F)}-\frac{3(c+dx)^4F^{a+b(c+dx)^2}}{2b^2d\log^2(F)}+\frac{(c+dx)^6F^{a+b(c+dx)^2}}{2bd\log(F)}$$

```
[Out] (-3*F^(a + b*(c + d*x)^2))/(b^4*d*Log[F]^4) + (3*F^(a + b*(c + d*
x)^2)*(c + d*x)^2)/(b^3*d*Log[F]^3) - (3*F^(a + b*(c + d*x)^2)*(c
 + d*x)^4)/(2*b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^
6)/(2*b*d*Log[F])
```

Rubi [A] time = 0.406479, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{3F^{a+b(c+dx)^2}}{b^4d\log^4(F)}+\frac{3(c+dx)^2F^{a+b(c+dx)^2}}{b^3d\log^3(F)}-\frac{3(c+dx)^4F^{a+b(c+dx)^2}}{2b^2d\log^2(F)}+\frac{(c+dx)^6F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^7,x]
```

```
[Out] (-3*F^(a + b*(c + d*x)^2))/(b^4*d*Log[F]^4) + (3*F^(a + b*(c + d*
x)^2)*(c + d*x)^2)/(b^3*d*Log[F]^3) - (3*F^(a + b*(c + d*x)^2)*(c
 + d*x)^4)/(2*b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^
6)/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 24.6809, size = 112, normalized size = 0.89

$$\frac{F^{a+b(c+dx)^2}(c+dx)^6}{2bd\log(F)}-\frac{3F^{a+b(c+dx)^2}(c+dx)^4}{2b^2d\log(F)^2}+\frac{3F^{a+b(c+dx)^2}(c+dx)^2}{b^3d\log(F)^3}-\frac{3F^{a+b(c+dx)^2}}{b^4d\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**7,x)
```

```
[Out] F**(a + b*(c + d*x)**2)*(c + d*x)**6/(2*b*d*log(F)) - 3*F**(a + b
*(c + d*x)**2)*(c + d*x)**4/(2*b**2*d*log(F)**2) + 3*F**(a + b*(c
 + d*x)**2)*(c + d*x)**2/(b**3*d*log(F)**3) - 3*F**(a + b*(c + d*
x)**2)/(b**4*d*log(F)**4)
```

Mathematica [A] time = 0.0478199, size = 72, normalized size = 0.57

$$\frac{F^{a+b(c+dx)^2}\left(b^3\log^3(F)(c+dx)^6-3b^2\log^2(F)(c+dx)^4+6b\log(F)(c+dx)^2-6\right)}{2b^4d\log^4(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^7,x]
```

```
[Out] (F^(a + b*(c + d*x)^2)*(-6 + 6*b*(c + d*x)^2*Log[F] - 3*b^2*(c +
d*x)^4*Log[F]^2 + b^3*(c + d*x)^6*Log[F]^3))/(2*b^4*d*Log[F]^4)
```

Maple [B] time = 0.016, size = 249, normalized size = 2.

$$\frac{\left(d^6x^6b^3\left(\ln(F)\right)^3+6\,cd^5x^5b^3\left(\ln(F)\right)^3+15\,\left(\ln(F)\right)^3b^3c^2d^4x^4+20\,\left(\ln(F)\right)^3b^3c^3d^3x^3+15\,\left(\ln(F)\right)^3b^3c^4d^2x^2+6\,\left(\ln(F)\right)^3b^3c^5\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^7,x)
```

```
[Out] 1/2*(d^6*x^6*b^3*ln(F)^3+6*c*d^5*x^5*b^3*ln(F)^3+15*ln(F)^3*b^3*c
^2*d^4*x^4+20*ln(F)^3*b^3*c^3*d^3*x^3+15*ln(F)^3*b^3*c^4*d^2*x^2+
6*ln(F)^3*b^3*c^5*d*x+ln(F)^3*b^3*c^6-3*d^4*x^4*b^2*ln(F)^2-12*d^
3*c*x^3*b^2*ln(F)^2-18*ln(F)^2*b^2*c^2*d^2*x^2-12*ln(F)^2*b^2*c^3
*d*x-3*ln(F)^2*b^2*c^4+6*ln(F)*b*d^2*x^2+12*ln(F)*b*c*d*x+6*ln(F)
*b*c^2-6)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)/ln(F)^4/b^4/d
```

Maxima [A] time = 1.52951, size = 4126, normalized size = 32.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -7/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^6*d/(sqrt(b*d
^2*log(F))*F^(b*c^2)) + 21/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*lo
g(F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(
F))^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*
(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*
c^2 + a)*c^5*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 35/2*(sqrt(pi)*
(b*d^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*lo
g(F))^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))) - 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F)
)^(7/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*l
og(F))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^
(3/2)))*F^(b*c^2 + a)*c^4*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 35
/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqr
t(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)
^4/((b*d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*
gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F
)^3/(b*d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^
2*c^2*d^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))
^5*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/
((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))^(5/2)))*F^(b*c^2 + a)*c^3*d^4/(sqrt(b*d^2*log(F))*F^(b*c
^2)) - 21/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5
*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
```

```
1)*log(F)^5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b
*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 1
0*b^4*c^2*d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))*log(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*
c*d*log(F))^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(
3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b
*d^2*log(F))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*g
amma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(
F)/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))^(5/2)))*F^(b*c^2 + a)*c^2*d^5/(sqrt(b*d^2*log(F))*F^
(b*c^2)) + 7/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6*
d^6*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
 - 1)*log(F)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2)
+ 20*b^5*c^3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) +
 b*c*d*log(F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^7
*gamma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(
F)^4/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(F))^5
*b^2*c^2*d^2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*log
(F))^7*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))^(7/2)))*F^(b*c^2 + a)*c*d^6/(sqrt(b*d^2*log(F))*F^(
b*c^2)) - 1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^7*c^7*d
^7*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
- 1)*log(F)^7/((b*d^2*log(F))^(15/2)*sqrt(-(b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))) - 7*b^7*c^6*d^8*e^((b*d^2*x*log(F) +
 b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(15/2) +
 35*b^6*c^4*d^8*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^6/(b*d^2*log(F))^(15/2) - 21*(b*d^2*x*log(F) +
b*c*d*log(F))^3*b^5*c^5*d^5*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(15/2)*(-(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 21*b^5*c^2*d
^8*gamma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*lo
g(F)^5/(b*d^2*log(F))^(15/2) + b^4*d^8*gamma(4, -(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(15/2)
- 35*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^3*c^3*d^3*gamma(5/2, -(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*
log(F))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)^(5/2)) - 7*(b*d^2*x*log(F) + b*c*d*log(F))^7*b*c*d*gamma(7/2, -
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*
log(F))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)^(7/2)))*F^(b*c^2 + a)*d^7/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*
sqrt(pi)*F^(b*c^2 + a)*c^7*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/s
qrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.290669, size = 281, normalized size = 2.23

$$\frac{\left(\left(b^3d^6x^6 + 6\,b^3cd^5x^5 + 15\,b^3c^2d^4x^4 + 20\,b^3c^3d^3x^3 + 15\,b^3c^4d^2x^2 + 6\,b^3c^5dx + b^3c^6\right)\log\left(F\right)^3 - 3\,\left(b^2d^4x^4 + 4\,b^2cd^3x^3 + 6\,b^2c\right.\right.}{2\,b^4d\log\left(F\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*((b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20*b^3
*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*log(
F)^3 - 3*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b
^2*c^3*d*x + b^2*c^4)*log(F)^2 + 6*(b*d^2*x^2 + 2*b*c*d*x + b*c^2
```

```
)*log(F) - 6)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(b^4*d*log(F)
^4)
```

Sympy [A] time = 0.788419, size = 366, normalized size = 2.9

$$\begin{cases} \frac{F^{a+b(c+dx)^2}\left(b^3c^6\log(F)^3+6b^3c^5dx\log(F)^3+15b^3c^4d^2x^2\log(F)^3+20b^3c^3d^3x^3\log(F)^3+15b^3c^2d^4x^4\log(F)^3+6b^3cd^5x^5\log(F)^3+b^3d^6x^6\log(F)^3-3b^2c^4\log(F\right.}{2b^4d\log(F)^4} \\ c^7x+\frac{7c^6dx^2}{2}+7c^5d^2x^3+\frac{35c^4d^3x^4}{4}+7c^3d^4x^5+\frac{7c^2d^5x^6}{2}+cd^6x^7+\frac{d^7x^8}{8} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**7,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**2)*(b**3*c**6*log(F)**3 + 6*b**3*
c**5*d*x*log(F)**3 + 15*b**3*c**4*d**2*x**2*log(F)**3 + 20*b**3*c
**3*d**3*x**3*log(F)**3 + 15*b**3*c**2*d**4*x**4*log(F)**3 + 6*b*
*3*c*d**5*x**5*log(F)**3 + b**3*d**6*x**6*log(F)**3 - 3*b**2*c**4
*log(F)**2 - 12*b**2*c**3*d*x*log(F)**2 - 18*b**2*c**2*d**2*x**2*
log(F)**2 - 12*b**2*c*d**3*x**3*log(F)**2 - 3*b**2*d**4*x**4*log(
F)**2 + 6*b*c**2*log(F) + 12*b*c*d*x*log(F) + 6*b*d**2*x**2*log(F
) - 6)/(2*b**4*d*log(F)**4), Ne(2*b**4*d*log(F)**4, 0)), (c**7*x
+ 7*c**6*d*x**2/2 + 7*c**5*d**2*x**3 + 35*c**4*d**3*x**4/4 + 7*c*
*3*d**4*x**5 + 7*c**2*d**5*x**6/2 + c*d**6*x**7 + d**7*x**8/8, Tr
ue))
```

GIAC/XCAS [A] time = 0.230104, size = 139, normalized size = 1.1

$$\frac{\left(b^3d^6\left(x+\frac{c}{d}\right)^6\ln(F)^3-3\,b^2d^4\left(x+\frac{c}{d}\right)^4\ln(F)^2+6\,bd^2\left(x+\frac{c}{d}\right)^2\ln(F)-6\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{2\,b^4d\ln(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/2*(b^3*d^6*(x + c/d)^6*ln(F)^3 - 3*b^2*d^4*(x + c/d)^4*ln(F)^2
+ 6*b*d^2*(x + c/d)^2*ln(F) - 6)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*l
n(F) + b*c^2*ln(F) + a*ln(F))/(b^4*d*ln(F)^4)
```

3.258 $\int F^{a+b(c+dx)^2}(c+dx)^5\,dx$

Optimal. Leaf size=91

$$\frac{F^{a+b(c+dx)^2}}{b^3d\log^3(F)}-\frac{(c+dx)^2F^{a+b(c+dx)^2}}{b^2d\log^2(F)}+\frac{(c+dx)^4F^{a+b(c+dx)^2}}{2bd\log(F)}$$

```
[Out] F^(a + b*(c + d*x)^2)/(b^3*d*Log[F]^3) - (F^(a + b*(c + d*x)^2)*(
c + d*x)^2)/(b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^4
)/(2*b*d*Log[F])
```

Rubi [A] time = 0.278476, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{F^{a+b(c+dx)^2}}{b^3d\log^3(F)}-\frac{(c+dx)^2F^{a+b(c+dx)^2}}{b^2d\log^2(F)}+\frac{(c+dx)^4F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^5,x]
```

```
[Out] F^(a + b*(c + d*x)^2)/(b^3*d*Log[F]^3) - (F^(a + b*(c + d*x)^2)*(
c + d*x)^2)/(b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^4
)/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 15.989, size = 76, normalized size = 0.84

$$\frac{F^{a+b(c+dx)^2}(c+dx)^4}{2bd\log(F)}-\frac{F^{a+b(c+dx)^2}(c+dx)^2}{b^2d\log(F)^2}+\frac{F^{a+b(c+dx)^2}}{b^3d\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**5,x)
```

```
[Out] F**(a + b*(c + d*x)**2)*(c + d*x)**4/(2*b*d*log(F)) - F**(a + b*(
c + d*x)**2)*(c + d*x)**2/(b**2*d*log(F)**2) + F**(a + b*(c + d*x
)**2)/(b**3*d*log(F)**3)
```

Mathematica [A] time = 0.0494947, size = 56, normalized size = 0.62

$$\frac{F^{a+b(c+dx)^2}\left(b^2\log^2(F)(c+dx)^4-2b\log(F)(c+dx)^2+2\right)}{2b^3d\log^3(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^5,x]
```

```
[Out] (F^(a + b*(c + d*x)^2)*(2 - 2*b*(c + d*x)^2*Log[F] + b^2*(c + d*x
)^4*Log[F]^2))/(2*b^3*d*Log[F]^3)
```

Maple [A] time = 0.01, size = 138, normalized size = 1.5

$$\frac{\left(d^{4}x^{4}b^{2}(\ln(F))^{2}+4\,d^{3}cx^{3}b^{2}(\ln(F))^{2}+6\,(\ln(F))^{2}\,b^{2}c^{2}d^{2}x^{2}+4\,(\ln(F))^{2}\,b^{2}c^{3}dx+(\ln(F))^{2}\,b^{2}c^{4}-2\,\ln(F)\,bd^{2}x^{2}-4\,\ln(F)\,b}{2\,(\ln(F))^{3}\,b^{3}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^5,x)
```

```
[Out] 1/2*(d^4*x^4*b^2*ln(F)^2+4*d^3*c*x^3*b^2*ln(F)^2+6*ln(F)^2*b^2*c^
2*d^2*x^2+4*ln(F)^2*b^2*c^3*d*x+ln(F)^2*b^2*c^4-2*ln(F)*b*d^2*x^2
-4*ln(F)*b*c*d*x-2*ln(F)*b*c^2+2)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)
/ln(F)^3/b^3/d
```

Maxima [A] time = 1.36954, size = 2430, normalized size = 26.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -5/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^4*d/(sqrt(b*d
^2*log(F))*F^(b*c^2)) + 5*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F
))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))
^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2
 + a)*c^3*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 5*(sqrt(pi)*(b*d^2
*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F))^
(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7/2
) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))
^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2))
)*F^(b*c^2 + a)*c^2*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 5/2*(sqr
t(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((b*
d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma(2
, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*
d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2*d
^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*gamm
a(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2
*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)^(5/2)))*F^(b*c^2 + a)*c*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 1/
2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(erf(sqrt
(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^
5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b^4*c^2*
d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*l
```

```
og(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d*log(F)
)^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3, -(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*log(F
))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamma(5/2,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2
*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))^(5/2)))*F^(b*c^2 + a)*d^5/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2
*sqrt(pi)*F^(b*c^2 + a)*c^5*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/
sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.246327, size = 162, normalized size = 1.78

$$\frac{\left(\left(b^2d^4x^4 + 4\,b^2cd^3x^3 + 6\,b^2c^2d^2x^2 + 4\,b^2c^3dx + b^2c^4\right)\log\left(F\right)^2 - 2\,\left(bd^2x^2 + 2\,bcdx + bc^2\right)\log\left(F\right) + 2\right)F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b^3d\log\left(F\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*((b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c
^3*d*x + b^2*c^4)*log(F)^2 - 2*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*lo
g(F) + 2)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(b^3*d*log(F)^3)
```

Sympy [A] time = 0.603353, size = 214, normalized size = 2.35

$$\begin{cases} \frac{F^{a+b(c+dx)^2}\left(b^2c^4\log\left(F\right)^2+4b^2c^3dx\log\left(F\right)^2+6b^2c^2d^2x^2\log\left(F\right)^2+4b^2cd^3x^3\log\left(F\right)^2+b^2d^4x^4\log\left(F\right)^2-2bc^2\log\left(F\right)-4bcdx\log\left(F\right)-2bd^2x^2\log\left(F\right)+2\right)}{2b^3d\log\left(F\right)^3} & \text{for} \\ c^5x + \frac{5c^4dx^2}{2} + \frac{10c^3d^2x^3}{3} + \frac{5c^2d^3x^4}{2} + cd^4x^5 + \frac{d^5x^6}{6} & \text{oth} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**5,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**2)*(b**2*c**4*log(F)**2 + 4*b**2*
c**3*d*x*log(F)**2 + 6*b**2*c**2*d**2*x**2*log(F)**2 + 4*b**2*c*d
**3*x**3*log(F)**2 + b**2*d**4*x**4*log(F)**2 - 2*b*c**2*log(F) -
 4*b*c*d*x*log(F) - 2*b*d**2*x**2*log(F) + 2)/(2*b**3*d*log(F)**3
), Ne(2*b**3*d*log(F)**3, 0)), (c**5*x + 5*c**4*d*x**2/2 + 10*c**
3*d**2*x**3/3 + 5*c**2*d**3*x**4/2 + c*d**4*x**5 + d**5*x**6/6, T
rue))
```

GIAC/XCAS [A] time = 0.250627, size = 111, normalized size = 1.22

$$\frac{\left(b^2d^4\left(x + \frac{c}{d}\right)^4\ln\left(F\right)^2 - 2\,bd^2\left(x + \frac{c}{d}\right)^2\ln\left(F\right) + 2\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{2\,b^3d\ln\left(F\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

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

3.259 $\int F^{a+b(c+dx)^2}(c+dx)^3\,dx$

Optimal. Leaf size=62

$$\frac{(c+dx)^2F^{a+b(c+dx)^2}}{2bd\log(F)}-\frac{F^{a+b(c+dx)^2}}{2b^2d\log^2(F)}$$

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

Rubi [A] time = 0.163811, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{(c+dx)^2F^{a+b(c+dx)^2}}{2bd\log(F)}-\frac{F^{a+b(c+dx)^2}}{2b^2d\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^3,x]
```

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

Rubi in Sympy [A] time = 9.04622, size = 49, normalized size = 0.79

$$\frac{F^{a+b(c+dx)^2}\left(c+dx\right)^2}{2bd\log\left(F\right)}-\frac{F^{a+b(c+dx)^2}}{2b^2d\log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**3,x)
```

```
[Out] F**(a + b*(c + d*x)**2)*(c + d*x)**2/(2*b*d*log(F)) - F**(a + b*(
c + d*x)**2)/(2*b**2*d*log(F)**2)
```

Mathematica [A] time = 0.0306243, size = 40, normalized size = 0.65

$$\frac{F^{a+b(c+dx)^2}\left(b\log(F)(c+dx)^2-1\right)}{2b^2d\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^3,x]
```

```
[Out] (F^(a + b*(c + d*x)^2)*(-1 + b*(c + d*x)^2*Log[F]))/(2*b^2*d*Log[
F]^2)
```

Maple [A] time = 0.01, size = 63, normalized size = 1.

$$\frac{\left(\ln\left(F\right)bd^2x^2+2\,\ln\left(F\right)bcdx+\ln\left(F\right)bc^2-1\right)F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,\left(\ln\left(F\right)\right)^2b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^3,x)
```

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

Maxima [A] time = 1.03958, size = 1160, normalized size = 18.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -3/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^2*d/(sqrt(b*d
^2*log(F))*F^(b*c^2)) + 3/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log
(F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F
))^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c
^2 + a)*c*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 1/2*(sqrt(pi)*(b*d
^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F)
)^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
- 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7
/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F
))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2
)))*F^(b*c^2 + a)*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt(p
i)*F^(b*c^2 + a)*c^3*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(-b
*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.261042, size = 81, normalized size = 1.31

$$\frac{\left(\left(bd^2x^2 + 2\,bcdx + bc^2\right)\log\left(F\right) - 1\right)F^{bd^2x^2 + 2\,bcdx + bc^2 + a}}{2\,b^2d\log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) - 1)*F^(b*d^2*x^2 + 2
*b*c*d*x + b*c^2 + a)/(b^2*d*log(F)^2)
```

Sympy [A] time = 0.455677, size = 100, normalized size = 1.61

$$\begin{cases} \frac{F^{a+b(c+dx)^2}\left(bc^2\log\left(F\right)+2bcdx\log\left(F\right)+bd^2x^2\log\left(F\right)-1\right)}{2b^2d\log\left(F\right)^2} & \text{for}\: 2b^2d\log\left(F\right)^2 \neq 0 \\ c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**3,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**2)*(b*c**2*log(F) + 2*b*c*d*x*log
(F) + b*d**2*x**2*log(F) - 1)/(2*b**2*d*log(F)**2), Ne(2*b**2*d*l
og(F)**2, 0)), (c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**
4/4, True))
```

GIAC/XCAS [A] time = 0.255136, size = 82, normalized size = 1.32

$$\frac{\left(bd^2\left(x+\frac{c}{d}\right)^2\ln\left(F\right)-1\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{2\,b^2d\ln\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

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

3.260 $\int F^{a+b(c+dx)^2}(c+dx)\,dx$

Optimal. Leaf size=27

$$\frac{F^{a+b(c+dx)^2}}{2bd\log(F)}$$

```
[Out] F^(a + b*(c + d*x)^2)/(2*b*d*Log[F])
```

Rubi [A] time = 0.0571422, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x),x]

[Out] F^(a + b*(c + d*x)^2)/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 3.72118, size = 19, normalized size = 0.7

$$\frac{F^{a+b(c+dx)^2}}{2bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c),x)

[Out] F**(a + b*(c + d*x)**2)/(2*b*d*log(F))
```

Mathematica [A] time = 0.00969516, size = 27, normalized size = 1.

$$\frac{F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x),x]

[Out] F^(a + b*(c + d*x)^2)/(2*b*d*Log[F])
```

Maple [A] time = 0.003, size = 36, normalized size = 1.3

$$\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c),x)
```

```
[Out] 1/2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)/b/d/ln(F)
```

Maxima [A] time = 0.76593, size = 34, normalized size = 1.26

$$\frac{F^{(dx+c)^2 b+a}}{2\,bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] 1/2*F^((d*x + c)^2*b + a)/(b*d*log(F))
```

Fricas [A] time = 0.252234, size = 47, normalized size = 1.74

$$\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(b*d*log(F))
```

Sympy [A] time = 0.306411, size = 36, normalized size = 1.33

$$\begin{cases} \frac{F^{a+b(c+dx)^2}}{2bd\log\left(F\right)} & \text{for}\: 2bd\log\left(F\right) \neq 0 \\ cx + \frac{dx^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c),x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**2)/(2*b*d*log(F)), Ne(2*b*d*log(F
), 0)), (c*x + d*x**2/2, True))
```

GIAC/XCAS [A] time = 0.22923, size = 34, normalized size = 1.26

$$\frac{F^{(dx+c)^2 b+a}}{2\,bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/2*F^((d*x + c)^2*b + a)/(b*d*ln(F))
```

3.261 $\int \frac{F^{a+b(c+dx)^2}}{c+dx}\,dx$

Optimal. Leaf size=22

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{2d}$$

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^2*Log[F]])/(2*d)
```

Rubi [A] time = 0.101934, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x),x]

[Out] (F^a*ExpIntegralEi[b*(c + d*x)^2*Log[F]])/(2*d)
```

Rubi in Sympy [A] time = 4.62034, size = 19, normalized size = 0.86

$$\frac{F^a\operatorname{Ei}\left(b\left(c+dx\right)^2\log\left(F\right)\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c),x)

[Out] F**a*Ei(b*(c + d*x)**2*log(F))/(2*d)
```

Mathematica [A] time = 0.0100455, size = 22, normalized size = 1.

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x),x]

[Out] (F^a*ExpIntegralEi[b*(c + d*x)^2*Log[F]])/(2*d)
```

Maple [A] time = 0.026, size = 23, normalized size = 1.1

$$-\frac{F^a Ei\left(1,-b\left(dx+c\right)^2\ln\left(F\right)\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c),x)
```

```
[Out] -1/2/d*F^a*Ei(1,-b*(d*x+c)^2*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c),x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c), x)
```

Fricas [A] time = 0.244363, size = 43, normalized size = 1.95

$$\frac{F^a\mathrm{Ei}\left(\left(bd^2x^2+2\,bcdx+bc^2\right)\log\left(F\right)\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/2*F^a*Ei((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F))/d
```

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

$$\int \frac{F^{a+b(c+dx)^2}}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c), x)
```

3.262 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^3} \, dx$

Optimal. Leaf size=53

$$\frac{bF^a \log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{2d} - \frac{F^{a+b(c+dx)^2}}{2d(c+dx)^2}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(2*d*(c + d*x)^2) + (b*F^a*ExpIntegralEi[b
*(c + d*x)^2*Log[F]]*Log[F])/(2*d)
```

Rubi [A] time = 0.204534, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{bF^a \log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{2d} - \frac{F^{a+b(c+dx)^2}}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^3,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(2*d*(c + d*x)^2) + (b*F^a*ExpIntegralEi[b
*(c + d*x)^2*Log[F]]*Log[F])/(2*d)
```

Rubi in Sympy [A] time = 8.85606, size = 46, normalized size = 0.87

$$\frac{F^a b \log(F) \operatorname{Ei}\left(b (c+dx)^2 \log(F)\right)}{2d} - \frac{F^{a+b(c+dx)^2}}{2d (c+dx)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**3,x)
```

```
[Out] F**a*b*log(F)*Ei(b*(c + d*x)**2*log(F))/(2*d) - F**(a + b*(c + d*
x)**2)/(2*d*(c + d*x)**2)
```

Mathematica [A] time = 0.0604579, size = 47, normalized size = 0.89

$$\frac{F^a \left(b\log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right) - \frac{F^{b(c+dx)^2}}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^3,x]
```

```
[Out] (F^a*(-(F^(b*(c + d*x)^2)/(c + d*x)^2) + b*ExpIntegralEi[b*(c + d
*x)^2*Log[F]]*Log[F]))/(2*d)
```

Maple [A] time = 0.042, size = 62, normalized size = 1.2

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,d\,(dx+c)^2} - \frac{b\ln(F)\,F^a Ei\left(1,-b\,(dx+c)^2\ln(F)\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^3,x)
```

```
[Out] -1/2/d/(d*x+c)^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/2/d*b*ln(F)*F^
a*Ei(1,-b*(d*x+c)^2*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^3, x)
```

Fricas [A] time = 0.262201, size = 135, normalized size = 2.55

$$\frac{(bd^2x^2 + 2\,bcdx + bc^2)\,F^a\mathrm{Ei}\left((bd^2x^2 + 2\,bcdx + bc^2)\log(F)\right)\log(F) - F^{bd^2x^2 + 2\,bcdx + bc^2 + a}}{2\,(d^3x^2 + 2\,cd^2x + c^2d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*F^a*Ei((b*d^2*x^2 + 2*b*c*d*
x + b*c^2)*log(F))*log(F) - F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)
)/(d^3*x^2 + 2*c*d^2*x + c^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^3, x)
```

3.263 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^5} dx$

Optimal. Leaf size=87

$$\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{4d}-\frac{F^{a+b(c+dx)^2}}{4d(c+dx)^4}-\frac{b\log(F)F^{a+b(c+dx)^2}}{4d(c+dx)^2}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(4*d*(c + d*x)^4) - (b*F^(a + b*(c + d*x)^
2)*Log[F])/(4*d*(c + d*x)^2) + (b^2*F^a*ExpIntegralEi[b*(c + d*x)
^2*Log[F]]*Log[F]^2)/(4*d)
```

Rubi [A] time = 0.305463, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{4d}-\frac{F^{a+b(c+dx)^2}}{4d(c+dx)^4}-\frac{b\log(F)F^{a+b(c+dx)^2}}{4d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^5,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(4*d*(c + d*x)^4) - (b*F^(a + b*(c + d*x)^
2)*Log[F])/(4*d*(c + d*x)^2) + (b^2*F^a*ExpIntegralEi[b*(c + d*x)
^2*Log[F]]*Log[F]^2)/(4*d)
```

Rubi in Sympy [A] time = 14.0176, size = 76, normalized size = 0.87

$$\frac{F^ab^2\log(F)^2\,\text{Ei}\left(b(c+dx)^2\log(F)\right)}{4d}-\frac{F^{a+b(c+dx)^2}b\log(F)}{4d(c+dx)^2}-\frac{F^{a+b(c+dx)^2}}{4d(c+dx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**5,x)
```

```
[Out] F**a*b**2*log(F)**2*Ei(b*(c + d*x)**2*log(F))/(4*d) - F**(a + b*(
c + d*x)**2)*b*log(F)/(4*d*(c + d*x)**2) - F**(a + b*(c + d*x)**2
)/(4*d*(c + d*x)**4)
```

Mathematica [A] time = 0.0981788, size = 64, normalized size = 0.74

$$\frac{F^a\left(b^2\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)-\frac{F^{b(c+dx)^2}\left(b\log(F)(c+dx)^2+1\right)}{(c+dx)^4}\right)}{4d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^5,x]
```

```
[Out] (F^a*(b^2*ExpIntegralEi[b*(c + d*x)^2*Log[F]]*Log[F]^2 - (F^(b*(c
 + d*x)^2)*(1 + b*(c + d*x)^2*Log[F]))/(c + d*x)^4))/(4*d)
```

Maple [A] time = 0.056, size = 104, normalized size = 1.2

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,d\,(dx+c)^4}-\frac{b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,d\,(dx+c)^2}-\frac{b^2\,(\ln(F))^2\,F^a Ei\left(1,-b\,(dx+c)^2\ln(F)\right)}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^5,x)
```

```
[Out] -1/4/d/(d*x+c)^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/4/d*b*ln(F)/(d
*x+c)^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/4/d*b^2*ln(F)^2*F^a*Ei(
1,-b*(d*x+c)^2*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^5,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^5, x)
```

Fricas [A] time = 0.26762, size = 247, normalized size = 2.84

$$\frac{\left(b^2d^4x^4+4\,b^2cd^3x^3+6\,b^2c^2d^2x^2+4\,b^2c^3dx+b^2c^4\right)F^a\mathrm{Ei}\left(\left(bd^2x^2+2\,bcdx+bc^2\right)\log(F)\right)\log(F)^2-\left(\left(bd^2x^2+2\,bcdx+bc\right.\right.}{4\left(d^5x^4+4\,cd^4x^3+6\,c^2d^3x^2+4\,c^3d^2x+c^4d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^5,x, algorithm="fricas")
```

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

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^5,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^5, x)
```

3.264 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^7}\,dx$

Optimal. Leaf size=121

$$\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{12d}-\frac{b^2\log^2(F)F^{a+b(c+dx)^2}}{12d(c+dx)^2}-\frac{F^{a+b(c+dx)^2}}{6d(c+dx)^6}-\frac{b\log(F)F^{a+b(c+dx)^2}}{12d(c+dx)^4}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(6*d*(c + d*x)^6) - (b*F^(a + b*(c + d*x)^
2)*Log[F])/(12*d*(c + d*x)^4) - (b^2*F^(a + b*(c + d*x)^2)*Log[F]
^2)/(12*d*(c + d*x)^2) + (b^3*F^a*ExpIntegralEi[b*(c + d*x)^2*Log
[F]]*Log[F]^3)/(12*d)
```

Rubi [A] time = 0.413434, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)}{12d}-\frac{b^2\log^2(F)F^{a+b(c+dx)^2}}{12d(c+dx)^2}-\frac{F^{a+b(c+dx)^2}}{6d(c+dx)^6}-\frac{b\log(F)F^{a+b(c+dx)^2}}{12d(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^7,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(6*d*(c + d*x)^6) - (b*F^(a + b*(c + d*x)^
2)*Log[F])/(12*d*(c + d*x)^4) - (b^2*F^(a + b*(c + d*x)^2)*Log[F]
^2)/(12*d*(c + d*x)^2) + (b^3*F^a*ExpIntegralEi[b*(c + d*x)^2*Log
[F]]*Log[F]^3)/(12*d)
```

Rubi in Sympy [A] time = 20.524, size = 107, normalized size = 0.88

$$\frac{F^ab^3\log(F)^3\operatorname{Ei}\left(b(c+dx)^2\log(F)\right)}{12d}-\frac{F^{a+b(c+dx)^2}b^2\log(F)^2}{12d(c+dx)^2}-\frac{F^{a+b(c+dx)^2}b\log(F)}{12d(c+dx)^4}-\frac{F^{a+b(c+dx)^2}}{6d(c+dx)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**7,x)
```

```
[Out] F**a*b**3*log(F)**3*Ei(b*(c + d*x)**2*log(F))/(12*d) - F**(a + b*
(c + d*x)**2)*b**2*log(F)**2/(12*d*(c + d*x)**2) - F**(a + b*(c +
 d*x)**2)*b*log(F)/(12*d*(c + d*x)**4) - F**(a + b*(c + d*x)**2)/
(6*d*(c + d*x)**6)
```

Mathematica [A] time = 0.10647, size = 79, normalized size = 0.65

$$\frac{F^a\left(b^3\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)-\frac{F^{b(c+dx)^2}\left(b^2\log^2(F)(c+dx)^4+b\log(F)(c+dx)^2+2\right)}{(c+dx)^6}\right)}{12d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^7,x]
```

```
[Out] (F^a*(b^3*ExpIntegralEi[b*(c + d*x)^2*Log[F]]*Log[F]^3 - (F^(b*(c
 + d*x)^2)*(2 + b*(c + d*x)^2*Log[F] + b^2*(c + d*x)^4*Log[F]^2))
```

```
/(c + d*x)^6))/(12*d)
```

Maple [A] time = 0.079, size = 146, normalized size = 1.2

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{6\,d\,(dx+c)^6}-\frac{b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{12\,d\,(dx+c)^4}-\frac{b^2\,(\ln(F))^2\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{12\,d\,(dx+c)^2}-\frac{b^3\,(\ln(F))^3\,F^a Ei\left(1,-b\,(dx+c)^2\ln(F)\right)}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^7,x)
```

```
[Out] -1/6/d/(d*x+c)^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/12/d*b*ln(F)/(
d*x+c)^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/12/d*b^2*ln(F)^2/(d*x+
c)^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/12/d*b^3*ln(F)^3*F^a*Ei(1,
-b*(d*x+c)^2*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^7, x)
```

Fricas [A] time = 0.257471, size = 394, normalized size = 3.26

$$\frac{\left(b^3d^6x^6+6\,b^3cd^5x^5+15\,b^3c^2d^4x^4+20\,b^3c^3d^3x^3+15\,b^3c^4d^2x^2+6\,b^3c^5dx+b^3c^6\right)F^a\mathrm{Ei}\left(\left(bd^2x^2+2\,bcdx+bc^2\right)\log(F)\right)\log}{12\,(d^7x^6+6\,cd^6x^5+15\,c^2d^5x^4+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/12*((b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20*b^
3*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*F^a
*Ei((b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F))*log(F)^3 - ((b^2*d^4*
x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c
^4)*log(F)^2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) + 2)*F^(b*d
^2*x^2 + 2*b*c*d*x + b*c^2 + a))/(d^7*x^6 + 6*c*d^6*x^5 + 15*c^2*
d^5*x^4 + 20*c^3*d^4*x^3 + 15*c^4*d^3*x^2 + 6*c^5*d^2*x + c^6*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**7,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2 b+a}}{(dx+c)^7}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^7,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^7, x)
```

3.265 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^9}\,dx$

Optimal. Leaf size=31

$$-\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-b\log(F)(c+dx)^2\right)}{2d}$$

```
[Out] -(b^4*F^a*Gamma[-4, -(b*(c + d*x)^2*Log[F])]*Log[F]^4)/(2*d)
```

Rubi [A] time = 0.0997704, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-b\log(F)(c+dx)^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^9,x]

[Out] -(b^4*F^a*Gamma[-4, -(b*(c + d*x)^2*Log[F])]*Log[F]^4)/(2*d)
```

Rubi in Sympy [A] time = 5.54684, size = 32, normalized size = 1.03

$$-\frac{F^ab^4\left(-4,-b\left(c+dx\right)^2\log\left(F\right)\right)\log\left(F\right)^4}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**9,x)

[Out] -F**a*b**4*Gamma(-4, -b*(c + d*x)**2*log(F))*log(F)**4/(2*d)
```

Mathematica [B] time = 0.101298, size = 95, normalized size = 3.06

$$\frac{F^a\left(b^4\log^4(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)-\frac{F^{b(c+dx)^2}\left(b^3\log^3(F)(c+dx)^6+b^2\log^2(F)(c+dx)^4+2b\log(F)(c+dx)^2+6\right)}{(c+dx)^8}\right)}{48d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^9,x]

[Out] (F^a*(b^4*ExpIntegralEi[b*(c + d*x)^2*Log[F]]*Log[F]^4 - (F^(b*(c
 + d*x)^2)*(6 + 2*b*(c + d*x)^2*Log[F] + b^2*(c + d*x)^4*Log[F]^2
 + b^3*(c + d*x)^6*Log[F]^3))/(c + d*x)^8))/(48*d)
```

Maple [B] time = 0.105, size = 188, normalized size = 6.1

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{8\,d\,(dx+c)^8}-\frac{b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{24\,d\,(dx+c)^6}-\frac{b^2\,(\ln(F))^2\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{48\,d\,(dx+c)^4}$$
$$-\frac{b^3\,(\ln(F))^3\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{48\,d\,(dx+c)^2}-\frac{b^4\,(\ln(F))^4\,F^aEi\left(1,-b\,(dx+c)^2\ln(F)\right)}{48\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^9,x)
```

```
[Out] -1/8/d/(d*x+c)^8*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/24/d*b*ln(F)/(
d*x+c)^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/48/d*b^2*ln(F)^2/(d*x+
c)^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/48/d*b^3*ln(F)^3/(d*x+c)^2
*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/48/d*b^4*ln(F)^4*F^a*Ei(1,-b*(
d*x+c)^2*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^9,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^9, x)
```

Fricas [A] time = 0.26124, size = 581, normalized size = 18.74

$$\frac{\left(b^4d^8x^8 + 8\,b^4cd^7x^7 + 28\,b^4c^2d^6x^6 + 56\,b^4c^3d^5x^5 + 70\,b^4c^4d^4x^4 + 56\,b^4c^5d^3x^3 + 28\,b^4c^6d^2x^2 + 8\,b^4c^7dx + b^4c^8\right)F^a\mathrm{Ei}\left(\left(bd^2x\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^9,x, algorithm="fricas")
```

```
[Out] 1/48*((b^4*d^8*x^8 + 8*b^4*c*d^7*x^7 + 28*b^4*c^2*d^6*x^6 + 56*b^
4*c^3*d^5*x^5 + 70*b^4*c^4*d^4*x^4 + 56*b^4*c^5*d^3*x^3 + 28*b^4*
c^6*d^2*x^2 + 8*b^4*c^7*d*x + b^4*c^8)*F^a*Ei((b*d^2*x^2 + 2*b*c*
d*x + b*c^2)*log(F))*log(F)^4 - ((b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 +
 15*b^3*c^2*d^4*x^4 + 20*b^3*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6
*b^3*c^5*d*x + b^3*c^6)*log(F)^3 + (b^2*d^4*x^4 + 4*b^2*c*d^3*x^3
 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*log(F)^2 + 2*(b*d
^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) + 6)*F^(b*d^2*x^2 + 2*b*c*d*x
+ b*c^2 + a))/(d^9*x^8 + 8*c*d^8*x^7 + 28*c^2*d^7*x^6 + 56*c^3*d^
6*x^5 + 70*c^4*d^5*x^4 + 56*c^5*d^4*x^3 + 28*c^6*d^3*x^2 + 8*c^7*
d^2*x + c^8*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**9,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^9,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^9, x)
```

3.266 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^{11}}\,dx$

Optimal. Leaf size=31

$$\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-b\log(F)(c+dx)^2\right)}{2d}$$

```
[Out] (b^5*F^a*Gamma[-5, -(b*(c + d*x)^2*Log[F])]*Log[F]^5)/(2*d)
```

Rubi [A] time = 0.0991752, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-b\log(F)(c+dx)^2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^11,x]

[Out] (b^5*F^a*Gamma[-5, -(b*(c + d*x)^2*Log[F])]*Log[F]^5)/(2*d)
```

Rubi in Sympy [A] time = 5.55515, size = 31, normalized size = 1.

$$\frac{F^a b^5\left(-5,-b\,(c+dx)^2\log(F)\right)\log(F)^5}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**11,x)

[Out] F**a*b**5*Gamma(-5, -b*(c + d*x)**2*log(F))*log(F)**5/(2*d)
```

Mathematica [B] time = 0.122616, size = 111, normalized size = 3.58

$$\frac{F^a\left(b^5\log^5(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^2\right)-\frac{F^{b(c+dx)^2}\left(b^4\log^4(F)(c+dx)^8+b^3\log^3(F)(c+dx)^6+2b^2\log^2(F)(c+dx)^4+6b\log(F)(c+dx)^2+24\right)}{(c+dx)^{10}}\right)}{240d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^11,x]

[Out] (F^a*(b^5*ExpIntegralEi[b*(c + d*x)^2*Log[F]]*Log[F]^5 - (F^(b*(c
 + d*x)^2)*(24 + 6*b*(c + d*x)^2*Log[F] + 2*b^2*(c + d*x)^4*Log[F
]^2 + b^3*(c + d*x)^6*Log[F]^3 + b^4*(c + d*x)^8*Log[F]^4))/(c +
d*x)^10))/(240*d)
```

Maple [B] time = 0.139, size = 230, normalized size = 7.4

$$-\frac{F^{b d^2 x^2+2 b c d x+b c^2+a}}{10 d (d x+c)^{10}}-\frac{b \ln (F) F^{b d^2 x^2+2 b c d x+b c^2+a}}{40 d (d x+c)^8}-\frac{b^2 (\ln (F))^2 F^{b d^2 x^2+2 b c d x+b c^2+a}}{120 d (d x+c)^6}-\frac{b^3 (\ln (F))^3 F^{b d^2 x^2+2 b c d x+b c^2+a}}{240 d (d x+c)^4}-\frac{b^4 (\ln (F))^4 F^{b d^2 x^2+2 b c d x+b c^2+a}}{240 d (d x+c)^2}-\frac{b^5 (\ln (F))^5 F^a Ei\left(1,-b (d x+c)^2 \ln (F)\right)}{240 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^11,x)
```

```
[Out] -1/10/d/(d*x+c)^10*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/40/d*b*ln(F)
/(d*x+c)^8*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/120/d*b^2*ln(F)^2/(d
*x+c)^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/240/d*b^3*ln(F)^3/(d*x+
c)^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/240/d*b^4*ln(F)^4/(d*x+c)^
2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/240/d*b^5*ln(F)^5*F^a*Ei(1,-b
*(d*x+c)^2*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2 b+a}}{(dx+c)^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^11,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^11, x)
```

Fricas [A] time = 0.251526, size = 805, normalized size = 25.97

$$\frac{\left(b^5 d^{10} x^{10} + 10\, b^5 c d^9 x^9 + 45\, b^5 c^2 d^8 x^8 + 120\, b^5 c^3 d^7 x^7 + 210\, b^5 c^4 d^6 x^6 + 252\, b^5 c^5 d^5 x^5 + 210\, b^5 c^6 d^4 x^4 + 120\, b^5 c^7 d^3 x^3 + 45\, b^5 c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^11,x, algorithm="fricas")
```

```
[Out] 1/240*((b^5*d^10*x^10 + 10*b^5*c*d^9*x^9 + 45*b^5*c^2*d^8*x^8 + 1
20*b^5*c^3*d^7*x^7 + 210*b^5*c^4*d^6*x^6 + 252*b^5*c^5*d^5*x^5 +
210*b^5*c^6*d^4*x^4 + 120*b^5*c^7*d^3*x^3 + 45*b^5*c^8*d^2*x^2 +
10*b^5*c^9*d*x + b^5*c^10)*F^a*Ei((b*d^2*x^2 + 2*b*c*d*x + b*c^2)
*log(F))*log(F)^5 - ((b^4*d^8*x^8 + 8*b^4*c*d^7*x^7 + 28*b^4*c^2*
d^6*x^6 + 56*b^4*c^3*d^5*x^5 + 70*b^4*c^4*d^4*x^4 + 56*b^4*c^5*d^
3*x^3 + 28*b^4*c^6*d^2*x^2 + 8*b^4*c^7*d*x + b^4*c^8)*log(F)^4 +
(b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20*b^3*c^3*
d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*log(F)^3
+ 2*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^
3*d*x + b^2*c^4)*log(F)^2 + 6*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log
(F) + 24)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/(d^11*x^10 + 10*
c*d^10*x^9 + 45*c^2*d^9*x^8 + 120*c^3*d^8*x^7 + 210*c^4*d^7*x^6 +
 252*c^5*d^6*x^5 + 210*c^6*d^5*x^4 + 120*c^7*d^4*x^3 + 45*c^8*d^3
*x^2 + 10*c^9*d^2*x + c^10*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**11,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^11,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^11, x)
```

3.267 $\int F^{a+b(c+dx)^2}(c+dx)^{12}\,dx$

Optimal. Leaf size=49

$$-\frac{F^a(c+dx)^{13}\text{Gamma}\left(\frac{13}{2},-b\log(F)(c+dx)^2\right)}{2d\left(-b\log(F)(c+dx)^2\right)^{13/2}}$$

```
[Out] -(F^a*(c + d*x)^13*Gamma[13/2, -(b*(c + d*x)^2*Log[F])])/(2*d*(-(
b*(c + d*x)^2*Log[F]))^(13/2))
```

Rubi [A] time = 0.10556, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a(c+dx)^{13}\text{Gamma}\left(\frac{13}{2},-b\log(F)(c+dx)^2\right)}{2d\left(-b\log(F)(c+dx)^2\right)^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^12,x]
```

```
[Out] -(F^a*(c + d*x)^13*Gamma[13/2, -(b*(c + d*x)^2*Log[F])])/(2*d*(-(
b*(c + d*x)^2*Log[F]))^(13/2))
```

Rubi in Sympy [A] time = 5.80039, size = 48, normalized size = 0.98

$$-\frac{F^a\left(c+dx\right)^{13}\left(\frac{13}{2},-b\left(c+dx\right)^2\log\left(F\right)\right)}{2d\left(-b\left(c+dx\right)^2\log\left(F\right)\right)^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**12,x)
```

```
[Out] -F**a*(c + d*x)**13*Gamma(13/2, -b*(c + d*x)**2*log(F))/(2*d*(-b*
(c + d*x)**2*log(F))**(13/2))
```

Mathematica [B] time = 0.217284, size = 155, normalized size = 3.16

$$\frac{F^a\left(10395\sqrt{\pi}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-2\sqrt{b}\sqrt{\log(F)}F^{b(c+dx)^2}\left(-32b^5\log^5(F)(c+dx)^{11}+176b^4\log^4(F)(c+dx)^9-792b^3\text{l}\right.}{128b^{13/2}d\log^{\frac{13}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^12,x]
```

```
[Out] (F^a*(10395*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]] - 2*Sqr
t[b]*F^(b*(c + d*x)^2)*Sqrt[Log[F]]*(10395*(c + d*x) - 6930*b*(c
+ d*x)^3*Log[F] + 2772*b^2*(c + d*x)^5*Log[F]^2 - 792*b^3*(c + d*
x)^7*Log[F]^3 + 176*b^4*(c + d*x)^9*Log[F]^4 - 32*b^5*(c + d*x)^1
1*Log[F]^5)))/(128*b^(13/2)*d*Log[F]^(13/2))
```

Maple [B] time = 0.374, size = 1686, normalized size = 34.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^12,x)
```

```
[Out] -10395/64/ln(F)^6/b^6*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-10395/64/
d*c/ln(F)^6/b^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2/d*c^11/ln(F)/
b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2*d^10/ln(F)/b*x^11*F^(b*d^2*
x^2+2*b*c*d*x+b*c^2+a)-693/16*d^4/ln(F)^4/b^4*x^5*F^(b*d^2*x^2+2*
b*c*d*x+b*c^2+a)+99/8*d^6/ln(F)^3/b^3*x^7*F^(b*d^2*x^2+2*b*c*d*x+
b*c^2+a)-11/4*d^8/ln(F)^2/b^2*x^9*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)
+3465/32*d^2/ln(F)^5/b^5*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-11/4
/d*c^9/ln(F)^2/b^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+99/8/d*c^7/ln(
F)^3/b^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-693/16/d*c^5/ln(F)^4/b^4
*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+3465/32/d*c^3/ln(F)^5/b^5*F^(b*d
^2*x^2+2*b*c*d*x+b*c^2+a)+693/8*c^6/ln(F)^3/b^3*x*F^(b*d^2*x^2+2*
b*c*d*x+b*c^2+a)-3465/16*c^4/ln(F)^4/b^4*x*F^(b*d^2*x^2+2*b*c*d*x
+b*c^2+a)+11/2*c^10/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+103
95/32*c^2/ln(F)^5/b^5*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-99/4*c^8/
ln(F)^2/b^2*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+2079/8*d*c^5/ln(F)^
3/b^3*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+231*d^5*c^5/ln(F)/b*x^6
*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-99*d*c^7/ln(F)^2/b^2*x^2*F^(b*d^
2*x^2+2*b*c*d*x+b*c^2+a)-231*d^2*c^6/ln(F)^2/b^2*x^3*F^(b*d^2*x^2
+2*b*c*d*x+b*c^2+a)+231*d^4*c^6/ln(F)/b*x^5*F^(b*d^2*x^2+2*b*c*d*
x+b*c^2+a)+165*d^3*c^7/ln(F)/b*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a
)+3465/8*d^3*c^3/ln(F)^3/b^3*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-
3465/16*d^3*c/ln(F)^4/b^4*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+103
95/32*d*c/ln(F)^5/b^5*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+693/8*d
^5*c/ln(F)^3/b^3*x^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-99/4*d^7*c/l
n(F)^2/b^2*x^8*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+11/2*d^9*c/ln(F)/b
*x^10*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3465/8*d*c^3/ln(F)^4/b^4*x^
2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-231*d^5*c^3/ln(F)^2/b^2*x^6*F^(
b*d^2*x^2+2*b*c*d*x+b*c^2+a)+165/2*d^7*c^3/ln(F)/b*x^8*F^(b*d^2*x
^2+2*b*c*d*x+b*c^2+a)+3465/8*d^2*c^4/ln(F)^3/b^3*x^3*F^(b*d^2*x^2
+2*b*c*d*x+b*c^2+a)-693/2*d^4*c^4/ln(F)^2/b^2*x^5*F^(b*d^2*x^2+2*
b*c*d*x+b*c^2+a)+165*d^6*c^4/ln(F)/b*x^7*F^(b*d^2*x^2+2*b*c*d*x+b
*c^2+a)+165/2*d^2*c^8/ln(F)/b*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)
+55/2*d*c^9/ln(F)/b*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3465/8*d^
2*c^2/ln(F)^4/b^4*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+2079/8*d^4*
c^2/ln(F)^3/b^3*x^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-99*d^6*c^2/ln
(F)^2/b^2*x^7*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+55/2*d^8*c^2/ln(F)/
b*x^9*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-693/2*d^3*c^5/ln(F)^2/b^2*x
^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-10395/128/d/ln(F)^6/b^6*Pi^(1/
2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*l
n(F))^(1/2))
```

Maxima [A] time = 1.77427, size = 10247, normalized size = 209.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^12*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -6*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d
^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^11*d/(sqrt(b*d^
2*log(F))*F^(b*c^2)) + 33*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F
))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*lo
```

```
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))
^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2
 + a)*c^10*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 110*(sqrt(pi)*(b*
d^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F
))^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
 - 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(
7/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(
F))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/
2)))*F^(b*c^2 + a)*c^9*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 495/2
*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4
/((b*d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))
^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*ga
mma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^
3/(b*d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*
c^2*d^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5
*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((
b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))^(5/2)))*F^(b*c^2 + a)*c^8*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2
)) - 396*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(e
rf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*
log(F)^5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b
^4*c^2*d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d
*log(F))^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^
2*log(F))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamm
a(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/
((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))^(5/2)))*F^(b*c^2 + a)*c^7*d^5/(sqrt(b*d^2*log(F))*F^(b*
c^2)) + 462*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6*d^6
*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
1)*log(F)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F) + b
*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2) + 2
0*b^5*c^3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*
c*d*log(F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^7*ga
mma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^
4/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^
2*c^2*d^2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*
log(F))^2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*log(F)
)^7*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))^(7/2)))*F^(b*c^2 + a)*c^6*d^6/(sqrt(b*d^2*log(F))*F^(b
*c^2)) - 396*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^7*c^7*d^
7*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
 1)*log(F)^7/((b*d^2*log(F))^(15/2)*sqrt(-(b*d^2*x*log(F) + b*c*d
*log(F))^2/(b*d^2*log(F)))) - 7*b^7*c^6*d^8*e^((b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(15/2) +
35*b^6*c^4*d^8*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^6/(b*d^2*log(F))^(15/2) - 21*(b*d^2*x*log(F) + b
*c*d*log(F))^3*b^5*c^5*d^5*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(15/2)*(-(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 21*b^5*c^2*d^
```

8*gamma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)^5/(b*d^2*log(F))^(15/2) + b^4*d^8*gamma(4, -(b*d^2*x*log(F) +
 b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(15/2) -
 35*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^3*c^3*d^3*gamma(5/2, -(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*l
og(F))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
^(5/2)) - 7*(b*d^2*x*log(F) + b*c*d*log(F))^7*b*c*d*gamma(7/2, -(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*l
og(F))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
^(7/2)))*F^(b*c^2 + a)*c^5*d^7/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 4
95/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^8*c^8*d^8*(erf(s
qrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(
F)^8/((b*d^2*log(F))^(17/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))
^2/(b*d^2*log(F)))) - 8*b^8*c^7*d^9*e^((b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(17/2) + 56*b^7*c
^5*d^9*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^7/(b*d^2*log(F))^(17/2) - 28*(b*d^2*x*log(F) + b*c*d*log
(F))^3*b^6*c^6*d^6*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))*log(F)^6/((b*d^2*log(F))^(17/2)*(-(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 56*b^6*c^3*d^9*gamma(
3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b
*d^2*log(F))^(17/2) + 8*b^5*c*d^9*gamma(4, -(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(17/2) - 70*
(b*d^2*x*log(F) + b*c*d*log(F))^5*b^4*c^4*d^4*gamma(5/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F
))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/
2)) - 28*(b*d^2*x*log(F) + b*c*d*log(F))^7*b^2*c^2*d^2*gamma(7/2,
 -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/((b*
d^2*log(F))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))^(7/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^9*gamma(9/2, -(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(17
/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F
^(b*c^2 + a)*c^4*d^8/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 110*(sqrt(p
i)*(b*d^2*x*log(F) + b*c*d*log(F))*b^9*c^9*d^9*(erf(sqrt(-(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^9/((b*d^2
*log(F))^(19/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))) - 9*b^9*c^8*d^10*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^9/(b*d^2*log(F))^(19/2) + 84*b^8*c^6*d^10*gam
ma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^8
/(b*d^2*log(F))^(19/2) - 36*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^7
*c^7*d^7*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)^7/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))^(3/2)) - 126*b^7*c^4*d^10*gamma(3, -(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log
(F))^(19/2) + 36*b^6*c^2*d^10*gamma(4, -(b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(19/2) - 126*(b*
d^2*x*log(F) + b*c*d*log(F))^5*b^5*c^5*d^5*gamma(5/2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^
(19/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2))
 - b^5*d^10*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)^5/(b*d^2*log(F))^(19/2) - 84*(b*d^2*x*log(F) + b*c*
d*log(F))^7*b^3*c^3*d^3*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 9*(b*d^2*x*log(F
) + b*c*d*log(F))^9*b*c*d*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c^2 + a)*c^3
*d^9/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 33*(sqrt(pi)*(b*d^2*x*log(F
) + b*c*d*log(F))*b^10*c^10*d^10*(erf(sqrt(-(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^10/((b*d^2*log(F))^(21/
2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 10*
b^10*c^9*d^11*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^10/(b*d^2*log(F))^(21/2) + 120*b^9*c^7*d^11*gamma(2, -(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^9/(b*d^2*l
og(F))^(21/2) - 45*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^8*c^8*d^8*
gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)^8/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))^(3/2)) - 252*b^8*c^5*d^11*gamma(3, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(21/
2) + 120*b^7*c^3*d^11*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(21/2) - 210*(b*d^2*x*lo
g(F) + b*c*d*log(F))^5*b^6*c^6*d^6*gamma(5/2, -(b*d^2*x*log(F) +

b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/((b*d^2*log(F))^(21/2)*(
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - 10*b^
6*c*d^11*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^6/(b*d^2*log(F))^(21/2) - 210*(b*d^2*x*log(F) + b*c*d*
log(F))^7*b^4*c^4*d^4*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))
^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 45*(b*d^2*x*log(F)
 + b*c*d*log(F))^9*b^2*c^2*d^2*gamma(9/2, -(b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)^2/((b*d^2*log(F))^(21/2)*(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)) - (b*d^2*x*
log(F) + b*c*d*log(F))^11*gamma(11/2, -(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))^(11/2)))*F^(b*c^2 + a)*c^2*d^10
/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 6*(sqrt(pi)*(b*d^2*x*log(F) + b
*c*d*log(F))*b^11*c^11*d^11*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))) - 1)*log(F)^11/((b*d^2*log(F))^(23/2)*sq
rt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 11*b^11*
c^10*d^12*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*lo
g(F)^11/(b*d^2*log(F))^(23/2) + 165*b^10*c^8*d^12*gamma(2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^10/(b*d^2*log
(F))^(23/2) - 55*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^9*c^9*d^9*ga
mma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F
)^9/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))^(3/2)) - 462*b^9*c^6*d^12*gamma(3, -(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^9/(b*d^2*log(F))^(23/2)
 + 330*b^8*c^4*d^12*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(23/2) - 330*(b*d^2*x*log(
F) + b*c*d*log(F))^5*b^7*c^7*d^7*gamma(5/2, -(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/((b*d^2*log(F))^(23/2)*(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - 55*b^7*
c^2*d^12*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^7/(b*d^2*log(F))^(23/2) + b^6*d^12*gamma(6, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^
(23/2) - 462*(b*d^2*x*log(F) + b*c*d*log(F))^7*b^5*c^5*d^5*gamma(
7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/
((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
log(F)))^(7/2)) - 165(b*d^2*x*log(F) + b*c*d*log(F))^9*b^3*c^3*
d^3*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^3/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))^(9/2)) - 11*(b*d^2*x*log(F) + b*c*d*log(F))^1
1*b*c*d*gamma(11/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)/((b*d^2*log(F))^(23/2)*(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))^(11/2)))*F^(b*c^2 + a)*c*d^11/(sqrt(b*d^2*
log(F))*F^(b*c^2)) + 1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F)
)*b^12*c^12*d^12*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))) - 1)*log(F)^12/((b*d^2*log(F))^(25/2)*sqrt(-(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 12*b^12*c^11*d^13*e
^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^12/(b*
d^2*log(F))^(25/2) + 220*b^11*c^9*d^13*gamma(2, -(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^11/(b*d^2*log(F))^(25/2)
 - 66*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^10*c^10*d^10*gamma(3/2,
 -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^10/((b
*d^2*log(F))^(25/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))^(3/2)) - 792*b^10*c^7*d^13*gamma(3, -(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))*log(F)^10/(b*d^2*log(F))^(25/2) + 79
2*b^9*c^5*d^13*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^9/(b*d^2*log(F))^(25/2) - 495*(b*d^2*x*log(F) +
b*c*d*log(F))^5*b^8*c^8*d^8*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^8/((b*d^2*log(F))^(25/2)*(-(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - 220*b^8*c^3*
d^13*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^8/(b*d^2*log(F))^(25/2) + 12*b^7*c*d^13*gamma(6, -(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))
^(25/2) - 924*(b*d^2*x*log(F) + b*c*d*log(F))^7*b^6*c^6*d^6*gamma
(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6
/((b*d^2*log(F))^(25/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))^(7/2)) - 495*(b*d^2*x*log(F) + b*c*d*log(F))^9*b^4*c^4
*d^4*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^4/((b*d^2*log(F))^(25/2)*(-(b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))^(9/2)) - 66*(b*d^2*x*log(F) + b*c*d*log(F))^
11*b^2*c^2*d^2*gamma(11/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^2/((b*d^2*log(F))^(25/2)*(-(b*d^2*x*log(F) +

```
b*c*d*log(F))^2/(b*d^2*log(F)))^(11/2)) - (b*d^2*x*log(F) + b*c*d
*log(F))^13*gamma(13/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))/((b*d^2*log(F))^(25/2)*(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))^(13/2)))*F^(b*c^2 + a)*d^12/(sqrt(b*d^2*log(F
))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)*c^12*erf(sqrt(-b*log(F
))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d
)
```

Fricas [A] time = 0.252854, size = 803, normalized size = 16.39

$$10395\,\sqrt{\pi}F^{a}d\,\mathrm{erf}\left(\frac{\sqrt{-bd^{2}\log(F)}(dx+c)}{d}\right)+2\left(32\left(b^{5}d^{11}x^{11}+11\,b^{5}cd^{10}x^{10}+55\,b^{5}c^{2}d^{9}x^{9}+165\,b^{5}c^{3}d^{8}x^{8}+330\,b^{5}c^{4}d^{7}x^{7}+462\,b^{5}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^12*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/128*(10395*sqrt(pi)*F^a*d*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d)
+ 2*(32*(b^5*d^11*x^11 + 11*b^5*c*d^10*x^10 + 55*b^5*c^2*d^9*x^9
+ 165*b^5*c^3*d^8*x^8 + 330*b^5*c^4*d^7*x^7 + 462*b^5*c^5*d^6*x^6
 + 462*b^5*c^6*d^5*x^5 + 330*b^5*c^7*d^4*x^4 + 165*b^5*c^8*d^3*x^
3 + 55*b^5*c^9*d^2*x^2 + 11*b^5*c^10*d*x + b^5*c^11)*log(F)^5 - 1
76*(b^4*d^9*x^9 + 9*b^4*c*d^8*x^8 + 36*b^4*c^2*d^7*x^7 + 84*b^4*c
^3*d^6*x^6 + 126*b^4*c^4*d^5*x^5 + 126*b^4*c^5*d^4*x^4 + 84*b^4*c
^6*d^3*x^3 + 36*b^4*c^7*d^2*x^2 + 9*b^4*c^8*d*x + b^4*c^9)*log(F)
^4 + 792*(b^3*d^7*x^7 + 7*b^3*c*d^6*x^6 + 21*b^3*c^2*d^5*x^5 + 35
*b^3*c^3*d^4*x^4 + 35*b^3*c^4*d^3*x^3 + 21*b^3*c^5*d^2*x^2 + 7*b^
3*c^6*d*x + b^3*c^7)*log(F)^3 - 2772*(b^2*d^5*x^5 + 5*b^2*c*d^4*x
^4 + 10*b^2*c^2*d^3*x^3 + 10*b^2*c^3*d^2*x^2 + 5*b^2*c^4*d*x + b^
2*c^5)*log(F)^2 - 10395*d*x + 6930*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3
*b*c^2*d*x + b*c^3)*log(F) - 10395*c)*sqrt(-b*d^2*log(F))*F^(b*d^
2*x^2 + 2*b*c*d*x + b*c^2 + a))/(sqrt(-b*d^2*log(F))*b^6*d*log(F)
^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**12,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.266658, size = 266, normalized size = 5.43

$$\frac{\left(32\,b^{5}d^{10}\left(x+\frac{c}{d}\right)^{11}\ln(F)^{5}-176\,b^{4}d^{8}\left(x+\frac{c}{d}\right)^{9}\ln(F)^{4}+792\,b^{3}d^{6}\left(x+\frac{c}{d}\right)^{7}\ln(F)^{3}-2772\,b^{2}d^{4}\left(x+\frac{c}{d}\right)^{5}\ln(F)^{2}+6930\,bd^{2}\left(x+\right.\right.}{64\,b^{6}\ln(F)^{6}}$$

$$-\frac{10395\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{(a\ln(F))}}{128\,\sqrt{-b\ln(F)}b^{6}d\ln(F)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^12*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/64*(32*b^5*d^10*(x + c/d)^11*ln(F)^5 - 176*b^4*d^8*(x + c/d)^9*
ln(F)^4 + 792*b^3*d^6*(x + c/d)^7*ln(F)^3 - 2772*b^2*d^4*(x + c/d
)^5*ln(F)^2 + 6930*b*d^2*(x + c/d)^3*ln(F) - 10395*x - 10395*c/d)
*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b
^6*ln(F)^6) - 10395/128*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))
*e^(a*ln(F))/(sqrt(-b*ln(F))*b^6*d*ln(F)^6)
```

3.268 $\int F^{a+b(c+dx)^2}(c+dx)^{10}\,dx$

Optimal. Leaf size=49

$$-\frac{F^a(c+dx)^{11}\text{Gamma}\left(\frac{11}{2},-b\log(F)(c+dx)^2\right)}{2d\left(-b\log(F)(c+dx)^2\right)^{11/2}}$$

```
[Out] -(F^a*(c + d*x)^11*Gamma[11/2, -(b*(c + d*x)^2*Log[F])])/(2*d*(-(
b*(c + d*x)^2*Log[F]))^(11/2))
```

Rubi [A] time = 0.105007, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a(c+dx)^{11}\text{Gamma}\left(\frac{11}{2},-b\log(F)(c+dx)^2\right)}{2d\left(-b\log(F)(c+dx)^2\right)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^10,x]
```

```
[Out] -(F^a*(c + d*x)^11*Gamma[11/2, -(b*(c + d*x)^2*Log[F])])/(2*d*(-(
b*(c + d*x)^2*Log[F]))^(11/2))
```

Rubi in Sympy [A] time = 5.72235, size = 48, normalized size = 0.98

$$-\frac{F^a\,(c+dx)^{11}\,\left(\frac{11}{2},-b\,(c+dx)^2\log{(F)}\right)}{2d\left(-b\,(c+dx)^2\log{(F)}\right)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**10,x)
```

```
[Out] -F**a*(c + d*x)**11*Gamma(11/2, -b*(c + d*x)**2*log(F))/(2*d*(-b*
(c + d*x)**2*log(F))**(11/2))
```

Mathematica [B] time = 0.220606, size = 139, normalized size = 2.84

$$\frac{F^a\left(2\sqrt{b}\sqrt{\log(F)}F^{b(c+dx)^2}\left(16b^4\log^4(F)(c+dx)^9-72b^3\log^3(F)(c+dx)^7+252b^2\log^2(F)(c+dx)^5-630b\log(F)(c+dx)^3+9\right.\right.}{64b^{11/2}d\log^{\frac{11}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^10,x]
```

```
[Out] (F^a*(-945*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]] + 2*Sqrt
[b]*F^(b*(c + d*x)^2)*Sqrt[Log[F]]*(945*(c + d*x) - 630*b*(c + d*
x)^3*Log[F] + 252*b^2*(c + d*x)^5*Log[F]^2 - 72*b^3*(c + d*x)^7*L
og[F]^3 + 16*b^4*(c + d*x)^9*Log[F]^4)))/(64*b^(11/2)*d*Log[F]^(1
1/2))
```

Maple [A] time = 0.164, size = 1209, normalized size = 24.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^10,x)
```

```
[Out] 9/2*d^7*c/ln(F)/b*x^8*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-63/4*d^5*c/
ln(F)^2/b^2*x^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-945/16*d*c/ln(F)^
4/b^4*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+315/8*d^3*c/ln(F)^3/b^3
*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+18*d^6*c^2/ln(F)/b*x^7*F^(b*
d^2*x^2+2*b*c*d*x+b*c^2+a)-189/4*d^4*c^2/ln(F)^2/b^2*x^5*F^(b*d^2
*x^2+2*b*c*d*x+b*c^2+a)+315/4*d^2*c^2/ln(F)^3/b^3*x^3*F^(b*d^2*x^
2+2*b*c*d*x+b*c^2+a)+63*d^4*c^4/ln(F)/b*x^5*F^(b*d^2*x^2+2*b*c*d*
x+b*c^2+a)+63*d^3*c^5/ln(F)/b*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)
+42*d^2*c^6/ln(F)/b*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+18*d*c^7/
ln(F)/b*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-189/4*d*c^5/ln(F)^2/b
^2*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-315/4*d^2*c^4/ln(F)^2/b^2*
x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+42*d^5*c^3/ln(F)/b*x^6*F^(b*d
^2*x^2+2*b*c*d*x+b*c^2+a)+315/4*d*c^3/ln(F)^3/b^3*x^2*F^(b*d^2*x^
2+2*b*c*d*x+b*c^2+a)-315/4*d^3*c^3/ln(F)^2/b^2*x^4*F^(b*d^2*x^2+2
*b*c*d*x+b*c^2+a)+945/32/ln(F)^5/b^5*x*F^(b*d^2*x^2+2*b*c*d*x+b*c
^2+a)-945/16*c^2/ln(F)^4/b^4*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+9/
2*c^8/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-63/4*c^6/ln(F)^2/
b^2*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+315/8*c^4/ln(F)^3/b^3*x*F^(
b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2*d^8/ln(F)/b*x^9*F^(b*d^2*x^2+2*b
*c*d*x+b*c^2+a)-9/4*d^6/ln(F)^2/b^2*x^7*F^(b*d^2*x^2+2*b*c*d*x+b*
c^2+a)+63/8*d^4/ln(F)^3/b^3*x^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3
15/16*d^2/ln(F)^4/b^4*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+63/8/d*
c^5/ln(F)^3/b^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-315/16/d*c^3/ln(F
)^4/b^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2/d*c^9/ln(F)/b*F^(b*d^
2*x^2+2*b*c*d*x+b*c^2+a)+945/32/d*c/ln(F)^5/b^5*F^(b*d^2*x^2+2*b*
c*d*x+b*c^2+a)-9/4/d*c^7/ln(F)^2/b^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2
+a)+945/64/d/ln(F)^5/b^5*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b
*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 1.63152, size = 7484, normalized size = 152.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -5*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d
^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^9*d/(sqrt(b*d^2
*log(F))*F^(b*c^2)) + 45/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(
F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F)
)^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^
2 + a)*c^8*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 60*(sqrt(pi)*(b*d
^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F)
)^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
- 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7
```

```
/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F
))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2
)))*F^(b*c^2 + a)*c^7*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 105*(s
qrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((
b*d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma
(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(
b*d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2
*d^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*ga
mma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d
^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))^(5/2)))*F^(b*c^2 + a)*c^6*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2))
- 126*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(erf(
sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log
(F)^5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b^4*
c^2*d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d*lo
g(F))^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3, -(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*l
og(F))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamma(5
/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b
*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))^(5/2)))*F^(b*c^2 + a)*c^5*d^5/(sqrt(b*d^2*log(F))*F^(b*c^2
)) + 105*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6*d^6*(e
rf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*
log(F)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2) + 20*b
^5*c^3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d
*log(F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^7*gamma
(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(
b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^2*c
^2*d^2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^7
*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((
b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))^(7/2)))*F^(b*c^2 + a)*c^4*d^6/(sqrt(b*d^2*log(F))*F^(b*c^
2)) - 60*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^7*c^7*d^7*(e
rf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*
log(F)^7/((b*d^2*log(F))^(15/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))) - 7*b^7*c^6*d^8*e^((b*d^2*x*log(F) + b*c*
d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(15/2) + 35*b
^6*c^4*d^8*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)^6/(b*d^2*log(F))^(15/2) - 21*(b*d^2*x*log(F) + b*c*d
*log(F))^3*b^5*c^5*d^5*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(15/2)*(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 21*b^5*c^2*d^8*ga
mma(3, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^
5/(b*d^2*log(F))^(15/2) + b^4*d^8*gamma(4, -(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(15/2) - 35*
(b*d^2*x*log(F) + b*c*d*log(F))^5*b^3*c^3*d^3*gamma(5/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F
))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/
2)) - 7*(b*d^2*x*log(F) + b*c*d*log(F))^7*b*c*d*gamma(7/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F
))^(15/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/
2)))*F^(b*c^2 + a)*c^3*d^7/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 45/2*
(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^8*c^8*d^8*(erf(sqrt(-
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^8/
```

```
((b*d^2*log(F))^(17/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))) - 8*b^8*c^7*d^9*e^((b*d^2*x*log(F) + b*c*d*log(F))
^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(17/2) + 56*b^7*c^5*d^
9*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log
(F)^7/(b*d^2*log(F))^(17/2) - 28*(b*d^2*x*log(F) + b*c*d*log(F))^
3*b^6*c^6*d^6*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^6/((b*d^2*log(F))^(17/2)*(-(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 56*b^6*c^3*d^9*gamma(3, -(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*
log(F))^(17/2) + 8*b^5*c*d^9*gamma(4, -(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(17/2) - 70*(b*d^
2*x*log(F) + b*c*d*log(F))^5*b^4*c^4*d^4*gamma(5/2, -(b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(1
7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) -
 28*(b*d^2*x*log(F) + b*c*d*log(F))^7*b^2*c^2*d^2*gamma(7/2, -(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/((b*d^2*l
og(F))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
^(7/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^9*gamma(9/2, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(17/2)*(
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c
^2 + a)*c^2*d^8/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 5*(sqrt(pi)*(b*d
^2*x*log(F) + b*c*d*log(F))*b^9*c^9*d^9*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^9/((b*d^2*log(F)
)^(19/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
 - 9*b^9*c^8*d^10*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))*log(F)^9/(b*d^2*log(F))^(19/2) + 84*b^8*c^6*d^10*gamma(2, -
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2
*log(F))^(19/2) - 36*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^7*c^7*d^
7*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*l
og(F)^7/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))^(3/2)) - 126*b^7*c^4*d^10*gamma(3, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(1
9/2) + 36*b^6*c^2*d^10*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(19/2) - 126*(b*d^2*x*l
og(F) + b*c*d*log(F))^5*b^5*c^5*d^5*gamma(5/2, -(b*d^2*x*log(F) +
 b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(19/2)*
(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - b^5*
d^10*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^5/(b*d^2*log(F))^(19/2) - 84*(b*d^2*x*log(F) + b*c*d*log(F
))^7*b^3*c^3*d^3*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) +
 b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 9*(b*d^2*x*log(F) + b*c
*d*log(F))^9*b*c*d*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^(19/2)*(-(b*d^2*x*log(F) +
 b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c^2 + a)*c*d^9/(sqr
t(b*d^2*log(F))*F^(b*c^2)) + 1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*
d*log(F))*b^10*c^10*d^10*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))) - 1)*log(F)^10/((b*d^2*log(F))^(21/2)*sqrt(
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 10*b^10*c^9
*d^11*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)
^10/(b*d^2*log(F))^(21/2) + 120*b^9*c^7*d^11*gamma(2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^9/(b*d^2*log(F))^(
21/2) - 45*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^8*c^8*d^8*gamma(3/
2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^8/((
b*d^2*log(F))^(21/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))^(3/2)) - 252*b^8*c^5*d^11*gamma(3, -(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))*log(F)^8/(b*d^2*log(F))^(21/2) + 120
*b^7*c^3*d^11*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))*log(F)^7/(b*d^2*log(F))^(21/2) - 210*(b*d^2*x*log(F) + b
*c*d*log(F))^5*b^6*c^6*d^6*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^6/((b*d^2*log(F))^(21/2)*(-(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - 10*b^6*c*d^11
*gamma(5, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(
F)^6/(b*d^2*log(F))^(21/2) - 210*(b*d^2*x*log(F) + b*c*d*log(F))^
7*b^4*c^4*d^4*gamma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))*log(F)^4/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*log(F) + b*
c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) - 45*(b*d^2*x*log(F) + b*c*d
*log(F))^9*b^2*c^2*d^2*gamma(9/2, -(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))*log(F)^2/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)) - (b*d^2*x*log(F) +
 b*c*d*log(F))^11*gamma(11/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))/((b*d^2*log(F))^(21/2)*(-(b*d^2*x*log(F) + b*c*d*
```

```
log(F))^2/(b*d^2*log(F)))^(11/2)))*F^(b*c^2 + a)*d^10/(sqrt(b*d^2
*log(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)*c^10*erf(sqrt(-b
*log(F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*
c^2)*d)
```

Fricas [A] time = 0.260754, size = 590, normalized size = 12.04

$$-\frac{945\sqrt{\pi}F^{a}d\,\mathrm{erf}\left(\frac{\sqrt{-bd^{2}\log(F)}(dx+c)}{d}\right)-2\left(16\left(b^{4}d^{9}x^{9}+9\,b^{4}cd^{8}x^{8}+36\,b^{4}c^{2}d^{7}x^{7}+84\,b^{4}c^{3}d^{6}x^{6}+126\,b^{4}c^{4}d^{5}x^{5}+126\,b^{4}c^{5}d^{4}x\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] -1/64*(945*sqrt(pi)*F^a*d*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) -
2*(16*(b^4*d^9*x^9 + 9*b^4*c*d^8*x^8 + 36*b^4*c^2*d^7*x^7 + 84*b^
4*c^3*d^6*x^6 + 126*b^4*c^4*d^5*x^5 + 126*b^4*c^5*d^4*x^4 + 84*b^
4*c^6*d^3*x^3 + 36*b^4*c^7*d^2*x^2 + 9*b^4*c^8*d*x + b^4*c^9)*log
(F)^4 - 72*(b^3*d^7*x^7 + 7*b^3*c*d^6*x^6 + 21*b^3*c^2*d^5*x^5 +
35*b^3*c^3*d^4*x^4 + 35*b^3*c^4*d^3*x^3 + 21*b^3*c^5*d^2*x^2 + 7*
b^3*c^6*d*x + b^3*c^7)*log(F)^3 + 252*(b^2*d^5*x^5 + 5*b^2*c*d^4*
x^4 + 10*b^2*c^2*d^3*x^3 + 10*b^2*c^3*d^2*x^2 + 5*b^2*c^4*d*x + b
^2*c^5)*log(F)^2 + 945*d*x - 630*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b
*c^2*d*x + b*c^3)*log(F) + 945*c)*sqrt(-b*d^2*log(F))*F^(b*d^2*x^
2 + 2*b*c*d*x + b*c^2 + a))/(sqrt(-b*d^2*log(F))*b^5*d*log(F)^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.252481, size = 238, normalized size = 4.86

$$\frac{\left(16\,b^{4}d^{8}\left(x+\frac{c}{d}\right)^{9}\ln(F)^{4}-72\,b^{3}d^{6}\left(x+\frac{c}{d}\right)^{7}\ln(F)^{3}+252\,b^{2}d^{4}\left(x+\frac{c}{d}\right)^{5}\ln(F)^{2}-630\,bd^{2}\left(x+\frac{c}{d}\right)^{3}\ln(F)+945\,x+\frac{945\,c}{d}\right)e^{\left(bd^{2}x\right.}}{32\,b^{5}\ln(F)^{5}}$$
$$+\frac{945\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{(a\ln(F))}}{64\sqrt{-b\ln(F)}b^{5}d\ln(F)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/32*(16*b^4*d^8*(x + c/d)^9*ln(F)^4 - 72*b^3*d^6*(x + c/d)^7*ln(
F)^3 + 252*b^2*d^4*(x + c/d)^5*ln(F)^2 - 630*b*d^2*(x + c/d)^3*ln
(F) + 945*x + 945*c/d)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c
^2*ln(F) + a*ln(F))/(b^5*ln(F)^5) + 945/64*sqrt(pi)*erf(-sqrt(-b*
ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqrt(-b*ln(F))*b^5*d*ln(F)^5)
```

3.269 $\int F^{a+b(c+dx)^2}(c+dx)^8\,dx$

Optimal. Leaf size=179

$$\frac{105\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{32b^{9/2}d\log^{\frac{9}{2}}(F)}-\frac{105(c+dx)F^{a+b(c+dx)^2}}{16b^4d\log^4(F)}+\frac{35(c+dx)^3F^{a+b(c+dx)^2}}{8b^3d\log^3(F)}-\frac{7(c+dx)^5F^{a+b(c+dx)^2}}{4b^2d\log^2(F)}+\frac{(c+dx)^7F^{a+b(c+dx)^2}}{2bd\log(F)}$$

```
[Out] (105*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(32*b^(9/
2)*d*Log[F]^(9/2)) - (105*F^(a + b*(c + d*x)^2)*(c + d*x))/(16*b^
4*d*Log[F]^4) + (35*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(8*b^3*d*L
og[F]^3) - (7*F^(a + b*(c + d*x)^2)*(c + d*x)^5)/(4*b^2*d*Log[F]^
2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^7)/(2*b*d*Log[F])
```

Rubi [A] time = 0.532622, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{105\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{32b^{9/2}d\log^{\frac{9}{2}}(F)}-\frac{105(c+dx)F^{a+b(c+dx)^2}}{16b^4d\log^4(F)}+\frac{35(c+dx)^3F^{a+b(c+dx)^2}}{8b^3d\log^3(F)}-\frac{7(c+dx)^5F^{a+b(c+dx)^2}}{4b^2d\log^2(F)}+\frac{(c+dx)^7F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^8,x]
```

```
[Out] (105*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(32*b^(9/
2)*d*Log[F]^(9/2)) - (105*F^(a + b*(c + d*x)^2)*(c + d*x))/(16*b^
4*d*Log[F]^4) + (35*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(8*b^3*d*L
og[F]^3) - (7*F^(a + b*(c + d*x)^2)*(c + d*x)^5)/(4*b^2*d*Log[F]^
2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^7)/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 37.9998, size = 165, normalized size = 0.92

$$\frac{105\sqrt{\pi}F^a\operatorname{erfi}\left(\sqrt{b}\,(c+dx)\sqrt{\log(F)}\right)}{32b^{\frac{9}{2}}d\log(F)^{\frac{9}{2}}}+\frac{F^{a+b(c+dx)^2}(c+dx)^7}{2bd\log(F)}-\frac{7F^{a+b(c+dx)^2}(c+dx)^5}{4b^2d\log(F)^2}+\frac{35F^{a+b(c+dx)^2}(c+dx)^3}{8b^3d\log(F)^3}-\frac{105F^{a+b(c+dx)^2}(c+dx)}{16b^4d\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**8,x)
```

```
[Out] 105*sqrt(pi)*F**a*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(32*b**(9/
2)*d*log(F)**(9/2)) + F**(a + b*(c + d*x)**2)*(c + d*x)**7/(2*b*d
*log(F)) - 7*F**(a + b*(c + d*x)**2)*(c + d*x)**5/(4*b**2*d*log(F
)**2) + 35*F**(a + b*(c + d*x)**2)*(c + d*x)**3/(8*b**3*d*log(F)*
*3) - 105*F**(a + b*(c + d*x)**2)*(c + d*x)/(16*b**4*d*log(F)**4)
```

Mathematica [A] time = 0.247969, size = 123, normalized size = 0.69

$$\frac{F^a\left(105\sqrt{\pi}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-2\sqrt{b}\sqrt{\log(F)}F^{b(c+dx)^2}\left(-8b^3\log^3(F)(c+dx)^7+28b^2\log^2(F)(c+dx)^5-70b\log(F)(c\right.}{32b^{9/2}d\log^{\frac{9}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^8,x]
```

```
[Out] (F^a*(105*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]] - 2*Sqrt[
b]*F^(b*(c + d*x)^2)*Sqrt[Log[F]]*(105*(c + d*x) - 70*b*(c + d*x)
^3*Log[F] + 28*b^2*(c + d*x)^5*Log[F]^2 - 8*b^3*(c + d*x)^7*Log[F
]^3)))/(32*b^(9/2)*d*Log[F]^(9/2))
```

Maple [B] time = 0.105, size = 814, normalized size = 4.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^8,x)
```

```
[Out] -35/4*d^3*c/ln(F)^2/b^2*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+105/8
*d*c/ln(F)^3/b^3*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+21/2*d^4*c^2
/ln(F)/b*x^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+35/2*d^3*c^3/ln(F)/b
*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+35/2*d^2*c^4/ln(F)/b*x^3*F^(
b*d^2*x^2+2*b*c*d*x+b*c^2+a)+21/2*d*c^5/ln(F)/b*x^2*F^(b*d^2*x^2+
2*b*c*d*x+b*c^2+a)-35/2*d*c^3/ln(F)^2/b^2*x^2*F^(b*d^2*x^2+2*b*c*
d*x+b*c^2+a)-35/2*d^2*c^2/ln(F)^2/b^2*x^3*F^(b*d^2*x^2+2*b*c*d*x+
b*c^2+a)+7/2*d^5*c/ln(F)/b*x^6*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-10
5/32/d/ln(F)^4/b^4*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F)
)^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+7/2*c^6/ln(F)/b*x*F^(b*d^2*
x^2+2*b*c*d*x+b*c^2+a)-35/4*c^4/ln(F)^2/b^2*x*F^(b*d^2*x^2+2*b*c*
d*x+b*c^2+a)+105/8*c^2/ln(F)^3/b^3*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2
+a)+35/8/d*c^3/ln(F)^3/b^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-105/16
/d*c/ln(F)^4/b^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2*d^6/ln(F)/b*
x^7*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-7/4*d^4/ln(F)^2/b^2*x^5*F^(b*
d^2*x^2+2*b*c*d*x+b*c^2+a)+35/8*d^2/ln(F)^3/b^3*x^3*F^(b*d^2*x^2+
2*b*c*d*x+b*c^2+a)+1/2/d*c^7/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2
+a)-7/4/d*c^5/ln(F)^2/b^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-105/16/
ln(F)^4/b^4*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)
```

Maxima [A] time = 1.52467, size = 5148, normalized size = 28.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -4*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d
^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^7*d/(sqrt(b*d^2
*log(F))*F^(b*c^2)) + 14*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F)
)*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c^2*d^3*e^((b*d^2*x*
```

log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^
(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2
+ a)*c^6*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 28*(sqrt(pi)*(b*d^2
*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F))^
(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7/2
) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))
^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2))
)*F^(b*c^2 + a)*c^5*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 35*(sqrt
(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((b*d
^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma(2,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d
^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2*d^
2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*l
og(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*gamma
(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*
log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
^(5/2)))*F^(b*c^2 + a)*c^4*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 2
8*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(erf(sqrt
(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^
5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b^4*c^2*
d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*l
og(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d*log(F)
)^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3, -(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*log(F
))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamma(5/2,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2
log(F))^(11/2)(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))^(5/2)))*F^(b*c^2 + a)*c^3*d^5/(sqrt(b*d^2*log(F))*F^(b*c^2)) +
14*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6*d^6*(erf(sq
rt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F
)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2) + 20*b^5*c^
3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(
F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^7*gamma(3, -
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2
log(F))^(13/2) - 15(b*d^2*x*log(F) + b*c*d*log(F))^5*b^2*c^2*d^
2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*l
og(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^7*gamm
a(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2
log(F))^(13/2)(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))^(7/2)))*F^(b*c^2 + a)*c^2*d^6/(sqrt(b*d^2*log(F))*F^(b*c^2)) -
4*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^7*c^7*d^7*(erf(sqr
t(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)
^7/((b*d^2*log(F))^(15/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))) - 7*b^7*c^6*d^8*e^((b*d^2*x*log(F) + b*c*d*log(
F))^2/(b*d^2*log(F)))*log(F)^7/(b*d^2*log(F))^(15/2) + 35*b^6*c^4
*d^8*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^6/(b*d^2*log(F))^(15/2) - 21*(b*d^2*x*log(F) + b*c*d*log(F
))^3*b^5*c^5*d^5*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))*log(F)^5/((b*d^2*log(F))^(15/2)*(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 21*b^5*c^2*d^8*gamma(3,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d

```
^2*log(F))^(15/2) + b^4*d^8*gamma(4, -(b*d^2*x*log(F) + b*c*d*log
(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(15/2) - 35*(b*d^2
*x*log(F) + b*c*d*log(F))^5*b^3*c^3*d^3*gamma(5/2, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(15
/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) -
7*(b*d^2*x*log(F) + b*c*d*log(F))^7*b*c*d*gamma(7/2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^(15
/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)))*F
^(b*c^2 + a)*c*d^7/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*(sqrt(pi)
*(b*d^2*x*log(F) + b*c*d*log(F))*b^8*c^8*d^8*(erf(sqrt(-(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^8/((b*d^2*l
og(F))^(17/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))) - 8*b^8*c^7*d^9*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^8/(b*d^2*log(F))^(17/2) + 56*b^7*c^5*d^9*gamma(2
, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^7/(b*
d^2*log(F))^(17/2) - 28*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^6*c^6
*d^6*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^6/((b*d^2*log(F))^(17/2)*(-(b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))^(3/2)) - 56*b^6*c^3*d^9*gamma(3, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(
17/2) + 8*b^5*c*d^9*gamma(4, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(
b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(17/2) - 70*(b*d^2*x*log(F
) + b*c*d*log(F))^5*b^4*c^4*d^4*gamma(5/2, -(b*d^2*x*log(F) + b*c
*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(17/2)*(-(b
*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5/2)) - 28*(b*d^
2*x*log(F) + b*c*d*log(F))^7*b^2*c^2*d^2*gamma(7/2, -(b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/((b*d^2*log(F))^(1
7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(7/2)) -
 (b*d^2*x*log(F) + b*c*d*log(F))^9*gamma(9/2, -(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(17/2)*(-(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(9/2)))*F^(b*c^2 + a)*d
^8/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)*c^
8*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(-b*
log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.270797, size = 414, normalized size = 2.31

$$\frac{105\,\sqrt{\pi}F^{a}d\,\mathrm{erf}\left(\frac{\sqrt{-bd^{2}\log(F)}(dx+c)}{d}\right)+2\,\sqrt{-bd^{2}\log\left(F\right)}\left(8\,\left(b^{3}d^{7}x^{7}+7\,b^{3}cd^{6}x^{6}+21\,b^{3}c^{2}d^{5}x^{5}+35\,b^{3}c^{3}d^{4}x^{4}+35\,b^{3}c^{4}d^{3}x^{3}+21\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/32*(105*sqrt(pi)*F^a*d*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) + 2
*sqrt(-b*d^2*log(F))*(8*(b^3*d^7*x^7 + 7*b^3*c*d^6*x^6 + 21*b^3*c
^2*d^5*x^5 + 35*b^3*c^3*d^4*x^4 + 35*b^3*c^4*d^3*x^3 + 21*b^3*c^5
*d^2*x^2 + 7*b^3*c^6*d*x + b^3*c^7)*log(F)^3 - 28*(b^2*d^5*x^5 +
5*b^2*c*d^4*x^4 + 10*b^2*c^2*d^3*x^3 + 10*b^2*c^3*d^2*x^2 + 5*b^2
*c^4*d*x + b^2*c^5)*log(F)^2 - 105*d*x + 70*(b*d^3*x^3 + 3*b*c*d^
2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F) - 105*c)*F^(b*d^2*x^2 + 2*b*c
*d*x + b*c^2 + a))/(sqrt(-b*d^2*log(F))*b^4*d*log(F)^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**8,x)
```

[Out] Timed out

GIAC/XCAS [A] time = 0.316864, size = 209, normalized size = 1.17

$$\frac{\left(8\,b^3d^6\left(x+\frac{c}{d}\right)^7\ln\left(F\right)^3-28\,b^2d^4\left(x+\frac{c}{d}\right)^5\ln\left(F\right)^2+70\,bd^2\left(x+\frac{c}{d}\right)^3\ln\left(F\right)-105\,x-\frac{105\,c}{d}\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{16\,b^4\ln\left(F\right)^4}$$

$$-\frac{105\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{32\,\sqrt{-b\ln\left(F\right)}b^4d\ln\left(F\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/16*(8*b^3*d^6*(x + c/d)^7*ln(F)^3 - 28*b^2*d^4*(x + c/d)^5*ln(F
)^2 + 70*b*d^2*(x + c/d)^3*ln(F) - 105*x - 105*c/d)*e^(b*d^2*x^2*
ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b^4*ln(F)^4) -
105/32*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqr
t(-b*ln(F))*b^4*d*ln(F)^4)
```

3.270 $\int F^{a+b(c+dx)^2}(c+dx)^6\,dx$

Optimal. Leaf size=145

$$-\frac{15\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{16b^{7/2}d\log^{\frac{7}{2}}(F)}+\frac{15(c+dx)F^{a+b(c+dx)^2}}{8b^3d\log^3(F)}-\frac{5(c+dx)^3F^{a+b(c+dx)^2}}{4b^2d\log^2(F)}+\frac{(c+dx)^5F^{a+b(c+dx)^2}}{2bd\log(F)}$$

```
[Out] (-15*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(16*b^(7/
2)*d*Log[F]^(7/2)) + (15*F^(a + b*(c + d*x)^2)*(c + d*x))/(8*b^3*
d*Log[F]^3) - (5*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(4*b^2*d*Log[
F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^5)/(2*b*d*Log[F])
```

Rubi [A] time = 0.374601, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{15\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{16b^{7/2}d\log^{\frac{7}{2}}(F)}+\frac{15(c+dx)F^{a+b(c+dx)^2}}{8b^3d\log^3(F)}-\frac{5(c+dx)^3F^{a+b(c+dx)^2}}{4b^2d\log^2(F)}+\frac{(c+dx)^5F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^6,x]
```

```
[Out] (-15*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(16*b^(7/
2)*d*Log[F]^(7/2)) + (15*F^(a + b*(c + d*x)^2)*(c + d*x))/(8*b^3*
d*Log[F]^3) - (5*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(4*b^2*d*Log[
F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^5)/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 26.9523, size = 133, normalized size = 0.92

$$-\frac{15\sqrt{\pi}F^a\,\text{erfi}\left(\sqrt{b}\,(c+dx)\,\sqrt{\log(F)}\right)}{16b^{\frac{7}{2}}d\log(F)^{\frac{7}{2}}}+\frac{F^{a+b(c+dx)^2}\,(c+dx)^5}{2bd\log(F)}-\frac{5F^{a+b(c+dx)^2}\,(c+dx)^3}{4b^2d\log(F)^2}+\frac{15F^{a+b(c+dx)^2}\,(c+dx)}{8b^3d\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**6,x)
```

```
[Out] -15*sqrt(pi)*F**a*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(16*b**(7/
2)*d*log(F)**(7/2)) + F**(a + b*(c + d*x)**2)*(c + d*x)**5/(2*b*d
*log(F)) - 5*F**(a + b*(c + d*x)**2)*(c + d*x)**3/(4*b**2*d*log(F
)**2) + 15*F**(a + b*(c + d*x)**2)*(c + d*x)/(8*b**3*d*log(F)**3)
```

Mathematica [A] time = 0.166298, size = 107, normalized size = 0.74

$$\frac{F^a\left(2\sqrt{b}\sqrt{\log(F)}F^{b(c+dx)^2}\left(4b^2\log^2(F)(c+dx)^5-10b\log(F)(c+dx)^3+15(c+dx)\right)-15\sqrt{\pi}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)\right)}{16b^{7/2}d\log^{\frac{7}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^6,x]
```

```
[Out] (F^a*(-15*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]] + 2*Sqrt[
b]*F^(b*(c + d*x)^2)*Sqrt[Log[F]]*(15*(c + d*x) - 10*b*(c + d*x)^
```

```
3*Log[F] + 4*b^2*(c + d*x)^5*Log[F]^2)))/(16*b^(7/2)*d*Log[F]^(7/
2))
```

Maple [B] time = 0.071, size = 501, normalized size = 3.5

$$\frac{15\,xF^{bd^2x^2+2\,bcdx+bc^2+a}}{8\,(\ln(F))^3\,b^3}+\frac{5\,d^3cx^4F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+5\,\frac{d^2c^2x^3F^{bd^2x^2+2\,bcdx+bc^2+a}}{b\ln(F)}+5\,\frac{dc^3x^2F^{bd^2x^2+2\,bcdx+bc^2+a}}{b\ln(F)}-\frac{15\,cdx^2F^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,(\ln(F))^2\,b^2}+\frac{d^4x^5F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+\frac{5\,c^4xF^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+\frac{c^5F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,d\ln(F)\,b}-\frac{5\,c^3F^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,d\,(\ln(F))^2\,b^2}-\frac{15\,c^2xF^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,(\ln(F))^2\,b^2}+\frac{15\,cF^{bd^2x^2+2\,bcdx+bc^2+a}}{8\,d\,(\ln(F))^3\,b^3}-\frac{5\,d^2x^3F^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,(\ln(F))^2\,b^2}+\frac{15\,\sqrt{\pi}F^a}{16\,d\,(\ln(F))^3\,b^3}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\,\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^6,x)
```

```
[Out] 15/8/ln(F)^3/b^3*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+5/2*d^3*c/ln(F
)/b*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+5*d^2*c^2/ln(F)/b*x^3*F^(
b*d^2*x^2+2*b*c*d*x+b*c^2+a)+5*d*c^3/ln(F)/b*x^2*F^(b*d^2*x^2+2*b
*c*d*x+b*c^2+a)-15/4*d*c/ln(F)^2/b^2*x^2*F^(b*d^2*x^2+2*b*c*d*x+b
*c^2+a)+1/2*d^4/ln(F)/b*x^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+5/2*c
^4/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2/d*c^5/ln(F)/b*F^
(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-5/4/d*c^3/ln(F)^2/b^2*F^(b*d^2*x^2+
2*b*c*d*x+b*c^2+a)-15/4*c^2/ln(F)^2/b^2*x*F^(b*d^2*x^2+2*b*c*d*x+
b*c^2+a)+15/8/d*c/ln(F)^3/b^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-5/4
*d^2/ln(F)^2/b^2*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+15/16/d/ln(F
)^3/b^3*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b
*c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 1.25976, size = 3239, normalized size = 22.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^6*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -3*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d
^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^5*d/(sqrt(b*d^2
*log(F))*F^(b*c^2)) + 15/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(
F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F)
)^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-
(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^
2 + a)*c^4*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 10*(sqrt(pi)*(b*d
^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F)
)^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
- 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
```

```
)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7
/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F
))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2
)))*F^(b*c^2 + a)*c^3*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 15/2*(
sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/(
(b*d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d
^2*log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamm
a(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/
(b*d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^
2*d^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*g
amma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*
d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))^(5/2)))*F^(b*c^2 + a)*c^2*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2))
 - 3*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(erf(s
qrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(
F)^5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))
^2/(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*d*lo
g(F))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b^4*c
^2*d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d*log
(F))^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3, -(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*lo
g(F))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamma(5/
2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*
d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))^(5/2)))*F^(b*c^2 + a)*c*d^5/(sqrt(b*d^2*log(F))*F^(b*c^2))
+ 1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^6*c^6*d^6*(erf(
sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log
(F)^6/((b*d^2*log(F))^(13/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))) - 6*b^6*c^5*d^7*e^((b*d^2*x*log(F) + b*c*d*l
og(F))^2/(b*d^2*log(F)))*log(F)^6/(b*d^2*log(F))^(13/2) + 20*b^5*
c^3*d^7*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)^5/(b*d^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*lo
g(F))^3*b^4*c^4*d^4*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2
/(b*d^2*log(F)))*log(F)^4/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - 6*b^4*c*d^7*gamma(3,
 -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^4/(b*d
^2*log(F))^(13/2) - 15*(b*d^2*x*log(F) + b*c*d*log(F))^5*b^2*c^2*
d^2*gamma(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))
*log(F)^2/((b*d^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F)
)^2/(b*d^2*log(F)))^(5/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^7*ga
mma(7/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d
^2*log(F))^(13/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))^(7/2)))*F^(b*c^2 + a)*d^6/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1
/2*sqrt(pi)*F^(b*c^2 + a)*c^6*erf(sqrt(-b*log(F))*d*x - b*c*log(F
)/sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.261008, size = 277, normalized size = 1.91

$$-\frac{15\,\sqrt{\pi}F^{a}d\,\mathrm{erf}\left(\frac{\sqrt{-bd^{2}\log(F)}(dx+c)}{d}\right)-2\,\sqrt{-bd^{2}\log(F)}\big(4\,\big(b^{2}d^{5}x^{5}+5\,b^{2}cd^{4}x^{4}+10\,b^{2}c^{2}d^{3}x^{3}+10\,b^{2}c^{3}d^{2}x^{2}+5\,b^{2}c^{4}dx+b^{2}c^{5}}{16\,\sqrt{-bd^{2}\log(F)}b^{3}d\log(F)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^6*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] -1/16*(15*sqrt(pi)*F^a*d*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) - 2
*sqrt(-b*d^2*log(F))*(4*(b^2*d^5*x^5 + 5*b^2*c*d^4*x^4 + 10*b^2*c
```

```
^2*d^3*x^3 + 10*b^2*c^3*d^2*x^2 + 5*b^2*c^4*d*x + b^2*c^5)*log(F)
^2 + 15*d*x - 10*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3
)*log(F) + 15*c)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/(sqrt(-b*
d^2*log(F))*b^3*d*log(F)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.323349, size = 181, normalized size = 1.25

$$\frac{\left(4\,b^2d^4\left(x+\frac{c}{d}\right)^5\ln\left(F\right)^2-10\,bd^2\left(x+\frac{c}{d}\right)^3\ln\left(F\right)+15\,x+\frac{15\,c}{d}\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{8\,b^3\ln\left(F\right)^3}+\frac{15\,\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{16\,\sqrt{-b\ln\left(F\right)}b^3d\ln\left(F\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^6*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/8*(4*b^2*d^4*(x + c/d)^5*ln(F)^2 - 10*b*d^2*(x + c/d)^3*ln(F) +
 15*x + 15*c/d)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F
) + a*ln(F))/(b^3*ln(F)^3) + 15/16*sqrt(pi)*erf(-sqrt(-b*ln(F))*d
*(x + c/d))*e^(a*ln(F))/(sqrt(-b*ln(F))*b^3*d*ln(F)^3)
```

3.271 $\int F^{a+b(c+dx)^2}(c+dx)^4\,dx$

Optimal. Leaf size=111

$$\frac{3\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{8b^{5/2}d\log^{\frac{5}{2}}(F)}-\frac{3(c+dx)F^{a+b(c+dx)^2}}{4b^2d\log^2(F)}+\frac{(c+dx)^3F^{a+b(c+dx)^2}}{2bd\log(F)}$$

```
[Out] (3*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(8*b^(5/2)*
d*Log[F]^(5/2)) - (3*F^(a + b*(c + d*x)^2)*(c + d*x))/(4*b^2*d*Lo
g[F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(2*b*d*Log[F])
```

Rubi [A] time = 0.248928, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{3\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{8b^{5/2}d\log^{\frac{5}{2}}(F)}-\frac{3(c+dx)F^{a+b(c+dx)^2}}{4b^2d\log^2(F)}+\frac{(c+dx)^3F^{a+b(c+dx)^2}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(c + d*x)^4,x]
```

```
[Out] (3*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(8*b^(5/2)*
d*Log[F]^(5/2)) - (3*F^(a + b*(c + d*x)^2)*(c + d*x))/(4*b^2*d*Lo
g[F]^2) + (F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 17.3632, size = 100, normalized size = 0.9

$$\frac{3\sqrt{\pi}F^a\operatorname{erfi}\left(\sqrt{b}\,(c+dx)\,\sqrt{\log(F)}\right)}{8b^{\frac{5}{2}}d\log(F)^{\frac{5}{2}}}+\frac{F^{a+b(c+dx)^2}(c+dx)^3}{2bd\log(F)}-\frac{3F^{a+b(c+dx)^2}(c+dx)}{4b^2d\log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**4,x)
```

```
[Out] 3*sqrt(pi)*F**a*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(8*b**(5/2)*
d*log(F)**(5/2)) + F**(a + b*(c + d*x)**2)*(c + d*x)**3/(2*b*d*lo
g(F)) - 3*F**(a + b*(c + d*x)**2)*(c + d*x)/(4*b**2*d*log(F)**2)
```

Mathematica [A] time = 0.137197, size = 88, normalized size = 0.79

$$\frac{\frac{3\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{b^{5/2}\log^{\frac{5}{2}}(F)}+\frac{2(c+dx)F^{a+b(c+dx)^2}\left(2b\log(F)(c+dx)^2-3\right)}{b^2\log^2(F)}}{8d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^4,x]
```

```
[Out] ((3*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(b^(5/2)*L
og[F]^(5/2)) + (2*F^(a + b*(c + d*x)^2)*(c + d*x)*(-3 + 2*b*(c +
d*x)^2*Log[F]))/(b^2*Log[F]^2))/(8*d)
```

Maple [B] time = 0.053, size = 270, normalized size = 2.4

$$\frac{d^2x^3F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+\frac{3\,cdx^2F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+\frac{3\,c^2xF^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+\frac{c^3F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,d\ln(F)\,b}-\frac{3\,cF^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,(\ln(F))^2\,b^2d}-\frac{3\,xF^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,(\ln(F))^2\,b^2}-\frac{3\,\sqrt{\pi}F^a}{8\,(\ln(F))^2\,b^2d}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\,\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^4,x)
```

```
[Out] 1/2*d^2/ln(F)/b*x^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+3/2*d*c/ln(F)
/b*x^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+3/2*c^2/ln(F)/b*x*F^(b*d^2
*x^2+2*b*c*d*x+b*c^2+a)+1/2/d*c^3/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+
b*c^2+a)-3/4/d*c/ln(F)^2/b^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3/4/
ln(F)^2/b^2*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3/8/d/ln(F)^2/b^2*P
i^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/
(-b*ln(F))^(1/2))
```

Maxima [A] time = 1.15663, size = 1755, normalized size = 15.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d
^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c^3*d/(sqrt(b*d^2
*log(F))*F^(b*c^2)) + 3*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))
*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(
5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2 +
 a)*c^2*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 2*(sqrt(pi)*(b*d^2*x
*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F))^(7
/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 3*
b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7/2)
- 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^(
7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*
F^(b*c^2 + a)*c*d^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*(sqrt(pi
)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((b*d^2*
log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma(2, -(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*
log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2*d^2*g
amma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(
```

```
F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*gamma(5/
2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log
(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5
/2)))*F^(b*c^2 + a)*d^4/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt
(pi)*F^(b*c^2 + a)*c^4*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(
-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.26962, size = 177, normalized size = 1.59

$$\frac{3\sqrt{\pi}F^{a}d\,\mathrm{erf}\left(\frac{\sqrt{-bd^{2}\log(F)}(dx+c)}{d}\right) - 2\sqrt{-bd^{2}\log(F)}\left(3\,dx - 2\left(bd^{3}x^{3} + 3\,bcd^{2}x^{2} + 3\,bc^{2}dx + bc^{3}\right)\log(F) + 3\,c\right)F^{bd^{2}x^{2}+2\,bcdx+}}{8\sqrt{-bd^{2}\log(F)}b^{2}d\log(F)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(3*sqrt(pi)*F^a*d*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) - 2*sq
rt(-b*d^2*log(F))*(3*d*x - 2*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2
*d*x + b*c^3)*log(F) + 3*c)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)
)/(sqrt(-b*d^2*log(F))*b^2*d*log(F)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.265232, size = 153, normalized size = 1.38

$$\frac{\left(2\,bd^{2}\left(x+\frac{c}{d}\right)^{3}\ln(F) - 3\,x - \frac{3\,c}{d}\right)e^{\left(bd^{2}x^{2}\ln(F)+2\,bcdx\ln(F)+bc^{2}\ln(F)+a\ln(F)\right)}}{4\,b^{2}\ln(F)^{2}} - \frac{3\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{8\sqrt{-b\ln(F)}b^{2}d\ln(F)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(2*b*d^2*(x + c/d)^3*ln(F) - 3*x - 3*c/d)*e^(b*d^2*x^2*ln(F)
+ 2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b^2*ln(F)^2) - 3/8*sq
rt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqrt(-b*ln(F
))*b^2*d*ln(F)^2)
```

3.272 $\int F^{a+b(c+dx)^2}(c+dx)^2\,dx$

Optimal. Leaf size=77

$$\frac{(c+dx)F^{a+b(c+dx)^2}}{2bd\log(F)}-\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d\log^{\frac{3}{2}}(F)}$$

```
[Out] -(F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/2)*d
*Log[F]^(3/2)) + (F^(a + b*(c + d*x)^2)*(c + d*x))/(2*b*d*Log[F])
```

Rubi [A] time = 0.137965, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{(c+dx)F^{a+b(c+dx)^2}}{2bd\log(F)}-\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d\log^{\frac{3}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^2)*(c + d*x)^2,x]
```

```
[Out] -(F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/2)*d
*Log[F]^(3/2)) + (F^(a + b*(c + d*x)^2)*(c + d*x))/(2*b*d*Log[F])
```

Rubi in Sympy [A] time = 9.23363, size = 66, normalized size = 0.86

$$-\frac{\sqrt{\pi}F^a\operatorname{erfi}\left(\sqrt{b}\,(c+dx)\,\sqrt{\log(F)}\right)}{4b^{\frac{3}{2}}d\log(F)^{\frac{3}{2}}}+\frac{F^{a+b(c+dx)^2}\,(c+dx)}{2bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**2,x)
```

```
[Out] -sqrt(pi)*F**a*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(4*b**(3/2)*d
*log(F)**(3/2)) + F**(a + b*(c + d*x)**2)*(c + d*x)/(2*b*d*log(F)
)
```

Mathematica [A] time = 0.0694123, size = 77, normalized size = 1.

$$\frac{(c+dx)F^{a+b(c+dx)^2}}{2bd\log(F)}-\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d\log^{\frac{3}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(a + b*(c + d*x)^2)*(c + d*x)^2,x]
```

```
[Out] -(F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/2)*d
*Log[F]^(3/2)) + (F^(a + b*(c + d*x)^2)*(c + d*x))/(2*b*d*Log[F])
```

Maple [A] time = 0.042, size = 121, normalized size = 1.6

$$\frac{xF^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,b\ln(F)}+\frac{cF^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,d\ln(F)\,b}+\frac{\sqrt{\pi}F^a}{4\,d\ln(F)\,b}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(d*x+c)^2,x)
```

```
[Out] 1/2/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2/d*c/ln(F)/b*F^(
b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/4/d/ln(F)/b*Pi^(1/2)*F^a/(-b*ln(F)
)^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 1.03472, size = 699, normalized size = 9.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d^2
*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*c*d/(sqrt(b*d^2*log
(F))*F^(b*c^2)) + 1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b
^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(5/
2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2 + a
)*d^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)
*c^2*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(
-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.282548, size = 123, normalized size = 1.6

$$-\frac{\sqrt{\pi}F^a d\,\mathrm{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right)-2\,\sqrt{-bd^2\log(F)}(dx+c)F^{bd^2x^2+2\,bcdx+bc^2+a}}{4\,\sqrt{-bd^2\log(F)}bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] -1/4*(sqrt(pi)*F^a*d*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) - 2*sqr
t(-b*d^2*log(F))*(d*x + c)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))
/(sqrt(-b*d^2*log(F))*b*d*log(F))
```

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

$$\int F^{a+b(c+dx)^2}\,(c+dx)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(d*x+c)**2,x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)*(c + d*x)**2, x)
```

GIAC/XCAS [A] time = 0.23159, size = 126, normalized size = 1.64

$$\frac{\left(x + \frac{c}{d}\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{2\,b\ln\left(F\right)} + \frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x + \frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{4\,\sqrt{-b\ln\left(F\right)}bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] 1/2*(x + c/d)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F)
+ a*ln(F))/(b*ln(F)) + 1/4*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/
d))*e^(a*ln(F))/(sqrt(-b*ln(F))*b*d*ln(F))
```

3.273 $\int F^{a+b(c+dx)^2}\,dx$

Optimal. Leaf size=44

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d*
Sqrt[Log[F]])
```

Rubi [A] time = 0.02603, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2),x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d*
Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 2.61782, size = 41, normalized size = 0.93

$$\frac{\sqrt{\pi}F^a\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2\sqrt{b}d\sqrt{\log\left(F\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2),x)
```

```
[Out] sqrt(pi)*F**a*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(2*sqrt(b)*d*s
qrt(log(F)))
```

Mathematica [A] time = 0.00764215, size = 44, normalized size = 1.

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2),x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d*
Sqrt[Log[F]])
```

Maple [A] time = 0.027, size = 44, normalized size = 1.

$$-\frac{F^a\sqrt{\pi}}{2\,d}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b*(d*x+c)^2),x)
```

```
[Out] -1/2*Pi^(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*
c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 0.925755, size = 78, normalized size = 1.77

$$\frac{\sqrt{\pi}F^{bc^2+a}\,\mathrm{erf}\left(\sqrt{-b\log(F)}dx-\frac{bc\log(F)}{\sqrt{-b\log(F)}}\right)}{2\sqrt{-b\log(F)}F^{bc^2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*c^2 + a)*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/s
qrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.262297, size = 51, normalized size = 1.16

$$\frac{\sqrt{\pi}F^{a}\,\mathrm{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right)}{2\sqrt{-bd^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d)/sqrt(-b*d^2
*log(F))
```

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

$$\int F^{a+b(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**(a+b*(d*x+c)**2),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2), x)
```

GIAC/XCAS [A] time = 0.236733, size = 51, normalized size = 1.16

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{(a\ln(F))}}{2\sqrt{-b\ln(F)}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqrt(
-b*ln(F))*d)
```

3.274 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^2} \, dx$

Optimal. Leaf size=67

$$\frac{\sqrt{\pi}\sqrt{b}F^a\sqrt{\log(F)}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{d}-\frac{F^{a+b(c+dx)^2}}{d(c+dx)}$$

```
[Out] -(F^(a + b*(c + d*x)^2)/(d*(c + d*x))) + (Sqrt[b]*F^a*Sqrt[Pi]*Er
fi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Sqrt[Log[F]])/d
```

Rubi [A] time = 0.130666, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{\sqrt{\pi}\sqrt{b}F^a\sqrt{\log(F)}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{d}-\frac{F^{a+b(c+dx)^2}}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^2,x]
```

```
[Out] -(F^(a + b*(c + d*x)^2)/(d*(c + d*x))) + (Sqrt[b]*F^a*Sqrt[Pi]*Er
fi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Sqrt[Log[F]])/d
```

Rubi in Sympy [A] time = 8.22285, size = 58, normalized size = 0.87

$$\frac{\sqrt{\pi}F^a\sqrt{b}\sqrt{\log(F)}\operatorname{erfi}\left(\sqrt{b}(c+dx)\sqrt{\log(F)}\right)}{d}-\frac{F^{a+b(c+dx)^2}}{d(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**2,x)
```

```
[Out] sqrt(pi)*F**a*sqrt(b)*sqrt(log(F))*erfi(sqrt(b)*(c + d*x)*sqrt(lo
g(F)))/d - F**(a + b*(c + d*x)**2)/(d*(c + d*x))
```

Mathematica [A] time = 0.0703771, size = 63, normalized size = 0.94

$$\frac{F^a\left(\sqrt{\pi}\sqrt{b}\sqrt{\log(F)}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-\frac{F^{b(c+dx)^2}}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^2,x]
```

```
[Out] (F^a*(-(F^(b*(c + d*x)^2)/(c + d*x)) + Sqrt[b]*Sqrt[Pi]*Erfi[Sqrt
[b]*(c + d*x)*Sqrt[Log[F]]]*Sqrt[Log[F]]))/d
```

Maple [A] time = 0.059, size = 71, normalized size = 1.1

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{(dx+c)\,d}+\frac{b\ln(F)\sqrt{\pi}F^a}{d}Erf\left(\sqrt{-b\ln(F)}\,(dx+c)\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^2,x)
```

```
[Out] -1/d/(d*x+c)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/d*b*ln(F)*Pi^(1/2)
*F^a/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)*(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^2, x)
```

Fricas [A] time = 0.275978, size = 132, normalized size = 1.97

$$\frac{\sqrt{\pi}\left(bd^2x+bcd\right)F^a\operatorname{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right)\log(F)-\sqrt{-bd^2\log(F)}F^{bd^2x^2+2\,bcdx+bc^2+a}}{\sqrt{-bd^2\log(F)}(d^2x+cd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] (sqrt(pi)*(b*d^2*x + b*c*d)*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)
/d)*log(F) - sqrt(-b*d^2*log(F))*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2
 + a))/(sqrt(-b*d^2*log(F))*(d^2*x + c*d))
```

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

$$\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**2,x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)/(c + d*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^2, x)
```

3.275 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^4}\,dx$

Optimal. Leaf size=102

$$\frac{2\sqrt{\pi}b^{3/2}F^a\log^{\frac{3}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{3d}-\frac{F^{a+b(c+dx)^2}}{3d(c+dx)^3}-\frac{2b\log(F)F^{a+b(c+dx)^2}}{3d(c+dx)}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(3*d*(c + d*x)^3) - (2*b*F^(a + b*(c + d*x
)^2)*Log[F])/(3*d*(c + d*x)) + (2*b^(3/2)*F^a*Sqrt[Pi]*Erfi[Sqrt[
b]*(c + d*x)*Sqrt[Log[F]]]*Log[F]^(3/2))/(3*d)
```

Rubi [A] time = 0.234112, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{2\sqrt{\pi}b^{3/2}F^a\log^{\frac{3}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{3d}-\frac{F^{a+b(c+dx)^2}}{3d(c+dx)^3}-\frac{2b\log(F)F^{a+b(c+dx)^2}}{3d(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^4,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(3*d*(c + d*x)^3) - (2*b*F^(a + b*(c + d*x
)^2)*Log[F])/(3*d*(c + d*x)) + (2*b^(3/2)*F^a*Sqrt[Pi]*Erfi[Sqrt[
b]*(c + d*x)*Sqrt[Log[F]]]*Log[F]^(3/2))/(3*d)
```

Rubi in Sympy [A] time = 14.2978, size = 92, normalized size = 0.9

$$\frac{2\sqrt{\pi}F^ab^{\frac{3}{2}}\log(F)^{\frac{3}{2}}\operatorname{erfi}\left(\sqrt{b}(c+dx)\sqrt{\log(F)}\right)}{3d}-\frac{2F^{a+b(c+dx)^2}b\log(F)}{3d(c+dx)}-\frac{F^{a+b(c+dx)^2}}{3d(c+dx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**4,x)
```

```
[Out] 2*sqrt(pi)*F**a*b**(3/2)*log(F)**(3/2)*erfi(sqrt(b)*(c + d*x)*sqr
t(log(F)))/(3*d) - 2*F**(a + b*(c + d*x)**2)*b*log(F)/(3*d*(c + d
*x)) - F**(a + b*(c + d*x)**2)/(3*d*(c + d*x)**3)
```

Mathematica [A] time = 0.137867, size = 81, normalized size = 0.79

$$\frac{F^a\left(2\sqrt{\pi}b^{3/2}\log^{\frac{3}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-\frac{F^{b(c+dx)^2}(2b\log(F)(c+dx)^2+1)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^4,x]
```

```
[Out] (F^a*(2*b^(3/2)*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Log
[F]^(3/2) - (F^(b*(c + d*x)^2)*(1 + 2*b*(c + d*x)^2*Log[F]))/(c +
 d*x)^3))/(3*d)
```

Maple [A] time = 0.059, size = 114, normalized size = 1.1

$$-\frac{F^{b d^2 x^2+2 b c d x+b c^2+a}}{3 d (dx+c)^3}-\frac{2 b \ln(F) F^{b d^2 x^2+2 b c d x+b c^2+a}}{3 (dx+c) d}+\frac{2 b^2 (\ln(F))^2 \sqrt{\pi} F^a}{3 d} Erf\left(\sqrt{-b \ln(F)}(dx+c)\right) \frac{1}{\sqrt{-b \ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^4,x)
```

```
[Out] -1/3/d/(d*x+c)^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-2/3/d*b*ln(F)/(d
*x+c)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+2/3/d*b^2*ln(F)^2*Pi^(1/2)*
F^a/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)*(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2 b+a}}{(dx+c)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^4, x)
```

Fricas [A] time = 0.25387, size = 246, normalized size = 2.41

$$\frac{2 \sqrt{\pi}\left(b^2 d^4 x^3+3 b^2 c d^3 x^2+3 b^2 c^2 d^2 x+b^2 c^3 d\right) F^a \operatorname{erf}\left(\frac{\sqrt{-b d^2 \log(F)}(dx+c)}{d}\right) \log(F)^2-\sqrt{-b d^2 \log(F)}\left(2\left(b d^2 x^2+2 b c d x+b c^2\right)\right.}{3\left(d^4 x^3+3 c d^3 x^2+3 c^2 d^2 x+c^3 d\right)\sqrt{-b d^2 \log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(2*sqrt(pi)*(b^2*d^4*x^3 + 3*b^2*c*d^3*x^2 + 3*b^2*c^2*d^2*x
+ b^2*c^3*d)*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d)*log(F)^2 -
sqrt(-b*d^2*log(F))*(2*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) + 1
)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/((d^4*x^3 + 3*c*d^3*x^2
+ 3*c^2*d^2*x + c^3*d)*sqrt(-b*d^2*log(F)))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2 b+a}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^4, x)
```

3.276 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^6}\,dx$

Optimal. Leaf size=136

$$\frac{4\sqrt{\pi}b^{5/2}F^a\log^{\frac{5}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{15d}-\frac{4b^2\log^2(F)F^{a+b(c+dx)^2}}{15d(c+dx)}-\frac{F^{a+b(c+dx)^2}}{5d(c+dx)^5}-\frac{2b\log(F)F^{a+b(c+dx)^2}}{15d(c+dx)^3}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(5*d*(c + d*x)^5) - (2*b*F^(a + b*(c + d*x
)^2)*Log[F])/(15*d*(c + d*x)^3) - (4*b^2*F^(a + b*(c + d*x)^2)*Lo
g[F]^2)/(15*d*(c + d*x)) + (4*b^(5/2)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(
c + d*x)*Sqrt[Log[F]]]*Log[F]^(5/2))/(15*d)
```

Rubi [A] time = 0.343683, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{4\sqrt{\pi}b^{5/2}F^a\log^{\frac{5}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{15d}-\frac{4b^2\log^2(F)F^{a+b(c+dx)^2}}{15d(c+dx)}-\frac{F^{a+b(c+dx)^2}}{5d(c+dx)^5}-\frac{2b\log(F)F^{a+b(c+dx)^2}}{15d(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^6,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(5*d*(c + d*x)^5) - (2*b*F^(a + b*(c + d*x
)^2)*Log[F])/(15*d*(c + d*x)^3) - (4*b^2*F^(a + b*(c + d*x)^2)*Lo
g[F]^2)/(15*d*(c + d*x)) + (4*b^(5/2)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(
c + d*x)*Sqrt[Log[F]]]*Log[F]^(5/2))/(15*d)
```

Rubi in Sympy [A] time = 21.7667, size = 124, normalized size = 0.91

$$\frac{4\sqrt{\pi}F^a b^{\frac{5}{2}}\log(F)^{\frac{5}{2}}\operatorname{erfi}\left(\sqrt{b}(c+dx)\sqrt{\log(F)}\right)}{15d}-\frac{4F^{a+b(c+dx)^2}b^2\log(F)^2}{15d(c+dx)}-\frac{2F^{a+b(c+dx)^2}b\log(F)}{15d(c+dx)^3}-\frac{F^{a+b(c+dx)^2}}{5d(c+dx)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**6,x)
```

```
[Out] 4*sqrt(pi)*F**a*b**(5/2)*log(F)**(5/2)*erfi(sqrt(b)*(c + d*x)*sqr
t(log(F)))/(15*d) - 4*F**(a + b*(c + d*x)**2)*b**2*log(F)**2/(15*
d*(c + d*x)) - 2*F**(a + b*(c + d*x)**2)*b*log(F)/(15*d*(c + d*x)
**3) - F**(a + b*(c + d*x)**2)/(5*d*(c + d*x)**5)
```

Mathematica [A] time = 0.116238, size = 97, normalized size = 0.71

$$\frac{F^a\left(4\sqrt{\pi}b^{5/2}\log^{\frac{5}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-\frac{F^{b(c+dx)^2}\left(4b^2\log^2(F)(c+dx)^4+2b\log(F)(c+dx)^2+3\right)}{(c+dx)^5}\right)}{15d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^6,x]
```

```
[Out] (F^a*(4*b^(5/2)*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Log
[F]^(5/2) - (F^(b*(c + d*x)^2)*(3 + 2*b*(c + d*x)^2*Log[F] + 4*b^
```

```
2*(c + d*x)^4*Log[F]^2))/(c + d*x)^5))/(15*d)
```

Maple [A] time = 0.078, size = 156, normalized size = 1.2

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{5\,d\,(dx+c)^5}-\frac{2\,b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{15\,d\,(dx+c)^3}-\frac{4\,b^2\,(\ln(F))^2\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{15\,(dx+c)\,d}+\frac{4\,b^3\,(\ln(F))^3\,\sqrt{\pi}F^a}{15\,d}Erf\left(\sqrt{-b\ln(F)}\,(dx+c)\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^6,x)
```

```
[Out] -1/5/d/(d*x+c)^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-2/15/d*b*ln(F)/(
d*x+c)^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-4/15/d*b^2*ln(F)^2/(d*x+
c)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+4/15/d*b^3*ln(F)^3*Pi^(1/2)*F^
a/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)*(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^6,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^6, x)
```

Fricas [A] time = 0.268034, size = 394, normalized size = 2.9

$$\frac{4\sqrt{\pi}\left(b^3d^6x^5+5\,b^3cd^5x^4+10\,b^3c^2d^4x^3+10\,b^3c^3d^3x^2+5\,b^3c^4d^2x+b^3c^5d\right)F^a\,\mathrm{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right)\log(F)^3-\sqrt{-bd^2\log}}{15\,(d^6x^5+5\,cd^5x^4+10\,c^2d^4x^3+10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^6,x, algorithm="fricas")
```

```
[Out] 1/15*(4*sqrt(pi)*(b^3*d^6*x^5 + 5*b^3*c*d^5*x^4 + 10*b^3*c^2*d^4*
x^3 + 10*b^3*c^3*d^3*x^2 + 5*b^3*c^4*d^2*x + b^3*c^5*d)*F^a*erf(s
qrt(-b*d^2*log(F))*(d*x + c)/d)*log(F)^3 - sqrt(-b*d^2*log(F))*(4
*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d
*x + b^2*c^4)*log(F)^2 + 2*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F)
 + 3)*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/((d^6*x^5 + 5*c*d^5*
x^4 + 10*c^2*d^4*x^3 + 10*c^3*d^3*x^2 + 5*c^4*d^2*x + c^5*d)*sqrt
(-b*d^2*log(F)))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^6,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^6, x)
```

3.277 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^8}\,dx$

Optimal. Leaf size=170

$$\frac{8\sqrt{\pi}b^{7/2}F^a\log^{\frac{7}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{105d}-\frac{8b^3\log^3(F)F^{a+b(c+dx)^2}}{105d(c+dx)}-\frac{4b^2\log^2(F)F^{a+b(c+dx)^2}}{105d(c+dx)^3}-\frac{F^{a+b(c+dx)^2}}{7d(c+dx)^7}-\frac{2b\log(F)F^{a+b(c+dx)^2}}{35d(c+dx)^5}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(7*d*(c + d*x)^7) - (2*b*F^(a + b*(c + d*x
)^2)*Log[F])/(35*d*(c + d*x)^5) - (4*b^2*F^(a + b*(c + d*x)^2)*Lo
g[F]^2)/(105*d*(c + d*x)^3) - (8*b^3*F^(a + b*(c + d*x)^2)*Log[F]
^3)/(105*d*(c + d*x)) + (8*b^(7/2)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c +
 d*x)*Sqrt[Log[F]]]*Log[F]^(7/2))/(105*d)
```

Rubi [A] time = 0.460442, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{8\sqrt{\pi}b^{7/2}F^a\log^{\frac{7}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{105d}-\frac{8b^3\log^3(F)F^{a+b(c+dx)^2}}{105d(c+dx)}-\frac{4b^2\log^2(F)F^{a+b(c+dx)^2}}{105d(c+dx)^3}-\frac{F^{a+b(c+dx)^2}}{7d(c+dx)^7}-\frac{2b\log(F)F^{a+b(c+dx)^2}}{35d(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^8,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(7*d*(c + d*x)^7) - (2*b*F^(a + b*(c + d*x
)^2)*Log[F])/(35*d*(c + d*x)^5) - (4*b^2*F^(a + b*(c + d*x)^2)*Lo
g[F]^2)/(105*d*(c + d*x)^3) - (8*b^3*F^(a + b*(c + d*x)^2)*Log[F]
^3)/(105*d*(c + d*x)) + (8*b^(7/2)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c +
 d*x)*Sqrt[Log[F]]]*Log[F]^(7/2))/(105*d)
```

Rubi in Sympy [A] time = 31.4278, size = 156, normalized size = 0.92

$$\frac{8\sqrt{\pi}F^ab^{\frac{7}{2}}\log\left(F\right)^{\frac{7}{2}}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{105d}-\frac{8F^{a+b(c+dx)^2}b^3\log\left(F\right)^3}{105d\left(c+dx\right)}-\frac{4F^{a+b(c+dx)^2}b^2\log\left(F\right)^2}{105d\left(c+dx\right)^3}-\frac{2F^{a+b(c+dx)^2}b\log\left(F\right)}{35d\left(c+dx\right)^5}-\frac{F^{a+b(c+dx)^2}}{7d\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**8,x)
```

```
[Out] 8*sqrt(pi)*F**a*b**(7/2)*log(F)**(7/2)*erfi(sqrt(b)*(c + d*x)*sqr
t(log(F)))/(105*d) - 8*F**(a + b*(c + d*x)**2)*b**3*log(F)**3/(10
5*d*(c + d*x)) - 4*F**(a + b*(c + d*x)**2)*b**2*log(F)**2/(105*d*
(c + d*x)**3) - 2*F**(a + b*(c + d*x)**2)*b*log(F)/(35*d*(c + d*x
)**5) - F**(a + b*(c + d*x)**2)/(7*d*(c + d*x)**7)
```

Mathematica [A] time = 0.157603, size = 113, normalized size = 0.66

$$\frac{F^a\left(8\sqrt{\pi}b^{7/2}\log^{\frac{7}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-\frac{F^{b(c+dx)^2}\left(8b^3\log^3(F)(c+dx)^6+4b^2\log^2(F)(c+dx)^4+6b\log(F)(c+dx)^2+15\right)}{(c+dx)^7}\right)}{105d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^8,x]
```

```
[Out] (F^a*(8*b^(7/2)*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Log
[F]^(7/2) - (F^(b*(c + d*x)^2)*(15 + 6*b*(c + d*x)^2*Log[F] + 4*b
^2*(c + d*x)^4*Log[F]^2 + 8*b^3*(c + d*x)^6*Log[F]^3))/(c + d*x)^
7))/(105*d)
```

Maple [A] time = 0.102, size = 198, normalized size = 1.2

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{7\,d\,(dx+c)^7}-\frac{2\,b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{35\,d\,(dx+c)^5}-\frac{4\,b^2\,(\ln(F))^2\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{105\,d\,(dx+c)^3}-\frac{8\,b^3\,(\ln(F))^3\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{105\,\,(dx+c)\,d}+\frac{8\,b^4\,(\ln(F))^4\,\sqrt{\pi}F^a}{105\,d}Erf\left(\sqrt{-b\ln(F)}\,(dx+c)\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^8,x)
```

```
[Out] -1/7/d/(d*x+c)^7*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-2/35/d*b*ln(F)/(
d*x+c)^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-4/105/d*b^2*ln(F)^2/(d*x
+c)^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-8/105/d*b^3*ln(F)^3/(d*x+c)
*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+8/105/d*b^4*ln(F)^4*Pi^(1/2)*F^a
/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)*(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^8, x)
```

Fricas [A] time = 0.253177, size = 581, normalized size = 3.42

$$\frac{8\sqrt{\pi}\left(b^4d^8x^7+7\,b^4cd^7x^6+21\,b^4c^2d^6x^5+35\,b^4c^3d^5x^4+35\,b^4c^4d^4x^3+21\,b^4c^5d^3x^2+7\,b^4c^6d^2x+b^4c^7d\right)F^a\,\mathrm{erf}\left(\frac{\sqrt{-bd^2\log(F)}(}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] 1/105*(8*sqrt(pi)*(b^4*d^8*x^7 + 7*b^4*c*d^7*x^6 + 21*b^4*c^2*d^6
*x^5 + 35*b^4*c^3*d^5*x^4 + 35*b^4*c^4*d^4*x^3 + 21*b^4*c^5*d^3*x
^2 + 7*b^4*c^6*d^2*x + b^4*c^7*d)*F^a*erf(sqrt(-b*d^2*log(F))*(d*
x + c)/d)*log(F)^4 - sqrt(-b*d^2*log(F))*(8*(b^3*d^6*x^6 + 6*b^3*
c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20*b^3*c^3*d^3*x^3 + 15*b^3*c^4*
d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*log(F)^3 + 4*(b^2*d^4*x^4 + 4*
b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*log(
```

```
F)^2 + 6*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) + 15)*F^(b*d^2*x^
2 + 2*b*c*d*x + b*c^2 + a))/((d^8*x^7 + 7*c*d^7*x^6 + 21*c^2*d^6*
x^5 + 35*c^3*d^5*x^4 + 35*c^4*d^4*x^3 + 21*c^5*d^3*x^2 + 7*c^6*d^
2*x + c^7*d)*sqrt(-b*d^2*log(F)))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**8,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^8,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^8, x)
```

3.278 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^{10}}\,dx$

Optimal. Leaf size=49

$$-\frac{F^a\left(-b\log(F)(c+dx)^2\right)^{9/2}\text{Gamma}\left(-\frac{9}{2},-b\log(F)(c+dx)^2\right)}{2d(c+dx)^9}$$

```
[Out] -(F^a*Gamma[-9/2, -(b*(c + d*x)^2*Log[F])]*(-(b*(c + d*x)^2*Log[F
]))^(9/2))/(2*d*(c + d*x)^9)
```

Rubi [A] time = 0.101008, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\left(-b\log(F)(c+dx)^2\right)^{9/2}\text{Gamma}\left(-\frac{9}{2},-b\log(F)(c+dx)^2\right)}{2d(c+dx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^10,x]
```

```
[Out] -(F^a*Gamma[-9/2, -(b*(c + d*x)^2*Log[F])]*(-(b*(c + d*x)^2*Log[F
]))^(9/2))/(2*d*(c + d*x)^9)
```

Rubi in Sympy [A] time = 5.37808, size = 49, normalized size = 1.

$$-\frac{F^a\left(-b\left(c+dx\right)^2\log\left(F\right)\right)^{\frac{9}{2}}\left(-\frac{9}{2},-b\left(c+dx\right)^2\log\left(F\right)\right)}{2d\left(c+dx\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**10,x)
```

```
[Out] -F**a*(-b*(c + d*x)**2*log(F))**(9/2)*Gamma(-9/2, -b*(c + d*x)**2
*log(F))/(2*d*(c + d*x)**9)
```

Mathematica [B] time = 0.159481, size = 129, normalized size = 2.63

$$\frac{F^a\left(16\sqrt{\pi}b^{9/2}\log^{\frac{9}{2}}(F)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-\frac{F^{b(c+dx)^2}\left(16b^4\log^4(F)(c+dx)^8+8b^3\log^3(F)(c+dx)^6+12b^2\log^2(F)(c+dx)^4+30b\log(F)(c+dx)^2+\right.}{(c+dx)^9}}{945d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^10,x]
```

```
[Out] (F^a*(16*b^(9/2)*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Lo
g[F]^(9/2) - (F^(b*(c + d*x)^2)*(105 + 30*b*(c + d*x)^2*Log[F] +
12*b^2*(c + d*x)^4*Log[F]^2 + 8*b^3*(c + d*x)^6*Log[F]^3 + 16*b^4
*(c + d*x)^8*Log[F]^4))/(c + d*x)^9))/(945*d)
```

Maple [A] time = 0.135, size = 240, normalized size = 4.9

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{9\,d\,(dx+c)^9}-\frac{2\,b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{63\,d\,(dx+c)^7}-\frac{4\,b^2\,(\ln(F))^2\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{315\,d\,(dx+c)^5}-\frac{8\,b^3\,(\ln(F))^3\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{945\,d\,(dx+c)^3}-\frac{16\,b^4\,(\ln(F))^4\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{945\,(dx+c)\,d}+\frac{16\,b^5\,(\ln(F))^5\,\sqrt{\pi}F^a}{945\,d}Erf\left(\sqrt{-b\ln(F)}\,(dx+c)\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^10,x)
```

```
[Out] -1/9/d/(d*x+c)^9*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-2/63/d*b*ln(F)/(
d*x+c)^7*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-4/315/d*b^2*ln(F)^2/(d*x
+c)^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-8/945/d*b^3*ln(F)^3/(d*x+c)
^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-16/945/d*b^4*ln(F)^4/(d*x+c)*F
^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+16/945/d*b^5*ln(F)^5*Pi^(1/2)*F^a/
(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)*(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^10, x)
```

Fricas [A] time = 0.256721, size = 805, normalized size = 16.43

$$16\sqrt{\pi}\left(b^5d^{10}x^9+9\,b^5cd^9x^8+36\,b^5c^2d^8x^7+84\,b^5c^3d^7x^6+126\,b^5c^4d^6x^5+126\,b^5c^5d^5x^4+84\,b^5c^6d^4x^3+36\,b^5c^7d^3x^2+9\,b^5c^8\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/945*(16*sqrt(pi)*(b^5*d^10*x^9 + 9*b^5*c*d^9*x^8 + 36*b^5*c^2*d
^8*x^7 + 84*b^5*c^3*d^7*x^6 + 126*b^5*c^4*d^6*x^5 + 126*b^5*c^5*d
^5*x^4 + 84*b^5*c^6*d^4*x^3 + 36*b^5*c^7*d^3*x^2 + 9*b^5*c^8*d^2*
x + b^5*c^9*d)*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d)*log(F)^5
- (16*(b^4*d^8*x^8 + 8*b^4*c*d^7*x^7 + 28*b^4*c^2*d^6*x^6 + 56*b^
4*c^3*d^5*x^5 + 70*b^4*c^4*d^4*x^4 + 56*b^4*c^5*d^3*x^3 + 28*b^4*
c^6*d^2*x^2 + 8*b^4*c^7*d*x + b^4*c^8)*log(F)^4 + 8*(b^3*d^6*x^6
+ 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20*b^3*c^3*d^3*x^3 + 15*
b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*log(F)^3 + 12*(b^2*d^4
*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*
c^4)*log(F)^2 + 30*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F) + 105)*
sqrt(-b*d^2*log(F))*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/((d^10
*x^9 + 9*c*d^9*x^8 + 36*c^2*d^8*x^7 + 84*c^3*d^7*x^6 + 126*c^4*d^
6*x^5 + 126*c^5*d^5*x^4 + 84*c^6*d^4*x^3 + 36*c^7*d^3*x^2 + 9*c^8
*d^2*x + c^9*d)*sqrt(-b*d^2*log(F)))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^10,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^10, x)
```

3.279 $\int \frac{F^{a+b(c+dx)^2}}{(c+dx)^{12}}\,dx$

Optimal. Leaf size=49

$$-\frac{F^a\left(-b\log(F)(c+dx)^2\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-b\log(F)(c+dx)^2\right)}{2d(c+dx)^{11}}$$

```
[Out] -(F^a*Gamma[-11/2, -(b*(c + d*x)^2*Log[F])]*(-(b*(c + d*x)^2*Log[
F]))^(11/2))/(2*d*(c + d*x)^11)
```

Rubi [A] time = 0.103438, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\left(-b\log(F)(c+dx)^2\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-b\log(F)(c+dx)^2\right)}{2d(c+dx)^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(c + d*x)^12,x]
```

```
[Out] -(F^a*Gamma[-11/2, -(b*(c + d*x)^2*Log[F])]*(-(b*(c + d*x)^2*Log[
F]))^(11/2))/(2*d*(c + d*x)^11)
```

Rubi in Sympy [A] time = 5.38391, size = 49, normalized size = 1.

$$-\frac{F^a\left(-b\left(c+dx\right)^2\log\left(F\right)\right)^{\frac{11}{2}}\left(-\frac{11}{2},-b\left(c+dx\right)^2\log\left(F\right)\right)}{2d\left(c+dx\right)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**12,x)
```

```
[Out] -F**a*(-b*(c + d*x)**2*log(F))**(11/2)*Gamma(-11/2, -b*(c + d*x)*
*2*log(F))/(2*d*(c + d*x)**11)
```

Mathematica [B] time = 0.1571, size = 152, normalized size = 3.1

$$\frac{F^a\left(32\sqrt{\pi}b^{11/2}\log^{\frac{11}{2}}(F)(c+dx)^{11}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)-F^{b(c+dx)^2}\left(32b^5\log^5(F)(c+dx)^{10}+16b^4\log^4(F)(c+dx)^8+24\right.}{10395d(c+dx)^{11}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(c + d*x)^12,x]
```

```
[Out] (F^a*(32*b^(11/2)*Sqrt[Pi]*(c + d*x)^11*Erfi[Sqrt[b]*(c + d*x)*Sq
rt[Log[F]]]*Log[F]^(11/2) - F^(b*(c + d*x)^2)*(945 + 210*b*(c + d
*x)^2*Log[F] + 60*b^2*(c + d*x)^4*Log[F]^2 + 24*b^3*(c + d*x)^6*L
og[F]^3 + 16*b^4*(c + d*x)^8*Log[F]^4 + 32*b^5*(c + d*x)^10*Log[F
]^5)))/(10395*d*(c + d*x)^11)
```

Maple [A] time = 0.171, size = 282, normalized size = 5.8

$$-\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{11\,d\,(dx+c)^{11}}-\frac{2\,b\ln(F)\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{99\,d\,(dx+c)^9}-\frac{4\,b^2\,(\ln(F))^2\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{693\,d\,(dx+c)^7}-\frac{8\,b^3\,(\ln(F))^3\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{3465\,d\,(dx+c)^5}-\frac{16\,b^4\,(\ln(F))^4\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{10395\,d\,(dx+c)^3}-\frac{32\,b^5\,(\ln(F))^5\,F^{bd^2x^2+2\,bcdx+bc^2+a}}{10395\,(dx+c)\,d}+\frac{32\,b^6\,(\ln(F))^6\,\sqrt{\pi}F^a}{10395\,d}Erf\left(\sqrt{-b\ln(F)}\,(dx+c)\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(d*x+c)^12,x)
```

```
[Out] -1/11/d/(d*x+c)^11*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-2/99/d*b*ln(F)
/(d*x+c)^9*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-4/693/d*b^2*ln(F)^2/(d
*x+c)^7*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-8/3465/d*b^3*ln(F)^3/(d*x
+c)^5*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-16/10395/d*b^4*ln(F)^4/(d*x
+c)^3*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-32/10395/d*b^5*ln(F)^5/(d*x
+c)*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+32/10395/d*b^6*ln(F)^6*Pi^(1/
2)*F^a/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)*(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{(dx+c)^2b+a}}{(dx+c)^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^12,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^12, x)
```

Fricas [A] time = 0.286857, size = 1067, normalized size = 21.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^12,x, algorithm="fricas")
```

```
[Out] 1/10395*(32*sqrt(pi)*(b^6*d^12*x^11 + 11*b^6*c*d^11*x^10 + 55*b^6
*c^2*d^10*x^9 + 165*b^6*c^3*d^9*x^8 + 330*b^6*c^4*d^8*x^7 + 462*b
^6*c^5*d^7*x^6 + 462*b^6*c^6*d^6*x^5 + 330*b^6*c^7*d^5*x^4 + 165*
b^6*c^8*d^4*x^3 + 55*b^6*c^9*d^3*x^2 + 11*b^6*c^10*d^2*x + b^6*c^
11*d)*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d)*log(F)^6 - (32*(b^
5*d^10*x^10 + 10*b^5*c*d^9*x^9 + 45*b^5*c^2*d^8*x^8 + 120*b^5*c^3
*d^7*x^7 + 210*b^5*c^4*d^6*x^6 + 252*b^5*c^5*d^5*x^5 + 210*b^5*c^
6*d^4*x^4 + 120*b^5*c^7*d^3*x^3 + 45*b^5*c^8*d^2*x^2 + 10*b^5*c^9
*d*x + b^5*c^10)*log(F)^5 + 16*(b^4*d^8*x^8 + 8*b^4*c*d^7*x^7 + 2
8*b^4*c^2*d^6*x^6 + 56*b^4*c^3*d^5*x^5 + 70*b^4*c^4*d^4*x^4 + 56*
b^4*c^5*d^3*x^3 + 28*b^4*c^6*d^2*x^2 + 8*b^4*c^7*d*x + b^4*c^8)*l
og(F)^4 + 24*(b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4
+ 20*b^3*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c
^6)*log(F)^3 + 60*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*
x^2 + 4*b^2*c^3*d*x + b^2*c^4)*log(F)^2 + 210*(b*d^2*x^2 + 2*b*c*
d*x + b*c^2)*log(F) + 945)*sqrt(-b*d^2*log(F))*F^(b*d^2*x^2 + 2*b
*c*d*x + b*c^2 + a))/((d^12*x^11 + 11*c*d^11*x^10 + 55*c^2*d^10*x
^9 + 165*c^3*d^9*x^8 + 330*c^4*d^8*x^7 + 462*c^5*d^7*x^6 + 462*c^
```

```
6*d^6*x^5 + 330*c^7*d^5*x^4 + 165*c^8*d^4*x^3 + 55*c^9*d^3*x^2 +
11*c^10*d^2*x + c^11*d)*sqrt(-b*d^2*log(F)))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(d*x+c)**12,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(dx+c)^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(d*x + c)^12,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^2*b + a)/(d*x + c)^12, x)
```

3.280 $\int F^{a+b(c+dx)^3}(c+dx)^m\,dx$

Optimal. Leaf size=61

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^3\right)^{\frac{1}{3}(-m-1)}\text{Gamma}\left(\frac{m+1}{3},-b\log(F)(c+dx)^3\right)}{3d}$$

```
[Out] -(F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/3, -(b*(c + d*x)^3*Log[F])]
*(-(b*(c + d*x)^3*Log[F]))^((-1 - m)/3))/(3*d)
```

Rubi [A] time = 0.104083, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^3\right)^{\frac{1}{3}(-m-1)}\text{Gamma}\left(\frac{m+1}{3},-b\log(F)(c+dx)^3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^m,x]
```

```
[Out] -(F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/3, -(b*(c + d*x)^3*Log[F])]
*(-(b*(c + d*x)^3*Log[F]))^((-1 - m)/3))/(3*d)
```

Rubi in Sympy [A] time = 6.14152, size = 58, normalized size = 0.95

$$-\frac{F^a\left(-b\left(c+dx\right)^3\log\left(F\right)\right)^{-\frac{m}{3}-\frac{1}{3}}\left(c+dx\right)^{m+1}\left(\frac{m}{3}+\frac{1}{3},-b\left(c+dx\right)^3\log\left(F\right)\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**m,x)
```

```
[Out] -F**a*(-b*(c + d*x)**3*log(F))**(-m/3 - 1/3)*(c + d*x)**(m + 1)*G
amma(m/3 + 1/3, -b*(c + d*x)**3*log(F))/(3*d)
```

Mathematica [A] time = 0.0706561, size = 61, normalized size = 1.

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^3\right)^{\frac{1}{3}(-m-1)}\text{Gamma}\left(\frac{m+1}{3},-b\log(F)(c+dx)^3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^m,x]
```

```
[Out] -(F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/3, -(b*(c + d*x)^3*Log[F])]
*(-(b*(c + d*x)^3*Log[F]))^((-1 - m)/3))/(3*d)
```

Maple [F] time = 0.073, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^3}(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^m,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)*(d*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{(dx+c)^3 b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*F^((d*x + c)^3*b + a), x)
```

Fricas [A] time = 0.256953, size = 96, normalized size = 1.57

$$\frac{e^{\left(-\frac{1}{3}(m-2)\log(-b\log(F))+a\log(F)\right)}\,\Gamma\left(\frac{1}{3}m+\frac{1}{3}, -\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\log(F)\right)}{3\,bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*e^(-1/3*(m - 2)*log(-b*log(F)) + a*log(F))*gamma(1/3*m + 1/3,
 -(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))/(b*d*
log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{(dx+c)^3 b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*F^((d*x + c)^3*b + a), x)
```

3.281 $\int F^{a+b(c+dx)^3}(c+dx)^{17}\,dx$

Optimal. Leaf size=31

$$-\frac{F^a\text{Gamma}\left(6,-b\log(F)(c+dx)^3\right)}{3b^6d\log^6(F)}$$

```
[Out] -(F^a*Gamma[6, -(b*(c + d*x)^3*Log[F])])/(3*b^6*d*Log[F]^6)
```

Rubi [A] time = 0.105488, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\text{Gamma}\left(6,-b\log(F)(c+dx)^3\right)}{3b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^17,x]
```

```
[Out] -(F^a*Gamma[6, -(b*(c + d*x)^3*Log[F])])/(3*b^6*d*Log[F]^6)
```

Rubi in Sympy [A] time = 7.10828, size = 31, normalized size = 1.

$$-\frac{F^a\left(6,-b\left(c+dx\right)^3\log\left(F\right)\right)}{3b^6d\log\left(F\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**17,x)
```

```
[Out] -F**a*Gamma(6, -b*(c + d*x)**3*log(F))/(3*b**6*d*log(F)**6)
```

Mathematica [B] time = 0.117336, size = 104, normalized size = 3.35

$$\frac{F^{a+b(c+dx)^3}\left(b^5\log^5(F)(c+dx)^{15}-5b^4\log^4(F)(c+dx)^{12}+20b^3\log^3(F)(c+dx)^9-60b^2\log^2(F)(c+dx)^6+120b\log(F)(c+d\right.}{3b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^17,x]
```

```
[Out] (F^(a + b*(c + d*x)^3)*(-120 + 120*b*(c + d*x)^3*Log[F] - 60*b^2*
(c + d*x)^6*Log[F]^2 + 20*b^3*(c + d*x)^9*Log[F]^3 - 5*b^4*(c + d
*x)^12*Log[F]^4 + b^5*(c + d*x)^15*Log[F]^5))/(3*b^6*d*Log[F]^6)
```

Maple [B] time = 0.033, size = 857, normalized size = 27.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^17,x)
```

```
[Out] 1/3*(-120+120*ln(F)*b*d^3*x^3+120*ln(F)*b*c^3+360*ln(F)*b*c^2*d*x
+360*ln(F)*b*c*d^2*x^2+d^15*x^15*ln(F)^5*b^5-5*d^12*x^12*ln(F)^4*
b^4+20*d^9*x^9*ln(F)^3*b^3-60*d^6*x^6*ln(F)^2*b^2+720*c^2*d^7*x^7
*ln(F)^3*b^3-60*ln(F)^4*b^4*c^11*d*x+1680*ln(F)^3*b^3*c^3*d^6*x^6
+2520*ln(F)^3*b^3*c^4*d^5*x^5+2520*ln(F)^3*b^3*c^5*d^4*x^4+1680*l
n(F)^3*b^3*c^6*d^3*x^3+720*ln(F)^3*b^3*c^7*d^2*x^2+180*ln(F)^3*b^
3*c^8*d*x-360*c*d^5*x^5*ln(F)^2*b^2-900*c^2*d^4*x^4*ln(F)^2*b^2-1
200*ln(F)^2*b^2*c^3*d^3*x^3-900*ln(F)^2*b^2*c^4*d^2*x^2-360*ln(F)
^2*b^2*c^5*d*x+ln(F)^5*b^5*c^15-5*ln(F)^4*b^4*c^12+20*ln(F)^3*b^3
*c^9+15*d^14*c*x^14*ln(F)^5*b^5+105*d^13*c^2*x^13*ln(F)^5*b^5+455
*ln(F)^5*b^5*c^3*d^12*x^12+1365*ln(F)^5*b^5*c^4*d^11*x^11+3003*ln
(F)^5*b^5*c^5*d^10*x^10+5005*ln(F)^5*b^5*c^6*d^9*x^9+6435*ln(F)^5
*b^5*c^7*d^8*x^8+6435*ln(F)^5*b^5*c^8*d^7*x^7+5005*ln(F)^5*b^5*c^
9*d^6*x^6-60*c*d^11*x^11*ln(F)^4*b^4+3003*ln(F)^5*b^5*c^10*d^5*x^
5-330*c^2*d^10*x^10*ln(F)^4*b^4+1365*ln(F)^5*b^5*c^11*d^4*x^4-110
0*ln(F)^4*b^4*c^3*d^9*x^9+455*ln(F)^5*b^5*c^12*d^3*x^3-2475*ln(F)
^4*b^4*c^4*d^8*x^8+105*ln(F)^5*b^5*c^13*d^2*x^2-3960*ln(F)^4*b^4*
c^5*d^7*x^7+15*ln(F)^5*b^5*c^14*d*x-4620*ln(F)^4*b^4*c^6*d^6*x^6-
3960*ln(F)^4*b^4*c^7*d^5*x^5-2475*ln(F)^4*b^4*c^8*d^4*x^4-1100*ln
(F)^4*b^4*c^9*d^3*x^3+180*c*d^8*x^8*ln(F)^3*b^3-330*ln(F)^4*b^4*c
^10*d^2*x^2-60*ln(F)^2*b^2*c^6)*F^(b*d^3*x^3+3*b*c*d^2*x^2+3*b*c^
2*d*x+b*c^3+a)/d/ln(F)^6/b^6
```

Maxima [A] time = 1.13413, size = 1712, normalized size = 55.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^17*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*(F^(b*c^3 + a)*b^5*d^15*x^15*log(F)^5 + 15*F^(b*c^3 + a)*b^5*
c*d^14*x^14*log(F)^5 + 105*F^(b*c^3 + a)*b^5*c^2*d^13*x^13*log(F)
^5 + F^(b*c^3 + a)*b^5*c^15*log(F)^5 - 5*F^(b*c^3 + a)*b^4*c^12*l
og(F)^4 + 20*F^(b*c^3 + a)*b^3*c^9*log(F)^3 + 5*(91*F^(b*c^3 + a)
*b^5*c^3*d^12*log(F)^5 - F^(b*c^3 + a)*b^4*d^12*log(F)^4)*x^12 +
15*(91*F^(b*c^3 + a)*b^5*c^4*d^11*log(F)^5 - 4*F^(b*c^3 + a)*b^4*
c*d^11*log(F)^4)*x^11 + 33*(91*F^(b*c^3 + a)*b^5*c^5*d^10*log(F)^
5 - 10*F^(b*c^3 + a)*b^4*c^2*d^10*log(F)^4)*x^10 - 60*F^(b*c^3 +
a)*b^2*c^6*log(F)^2 + 5*(1001*F^(b*c^3 + a)*b^5*c^6*d^9*log(F)^5
- 220*F^(b*c^3 + a)*b^4*c^3*d^9*log(F)^4 + 4*F^(b*c^3 + a)*b^3*d^
9*log(F)^3)*x^9 + 45*(143*F^(b*c^3 + a)*b^5*c^7*d^8*log(F)^5 - 55
*F^(b*c^3 + a)*b^4*c^4*d^8*log(F)^4 + 4*F^(b*c^3 + a)*b^3*c*d^8*l
og(F)^3)*x^8 + 45*(143*F^(b*c^3 + a)*b^5*c^8*d^7*log(F)^5 - 88*F^
(b*c^3 + a)*b^4*c^5*d^7*log(F)^4 + 16*F^(b*c^3 + a)*b^3*c^2*d^7*l
og(F)^3)*x^7 + 5*(1001*F^(b*c^3 + a)*b^5*c^9*d^6*log(F)^5 - 924*F
^(b*c^3 + a)*b^4*c^6*d^6*log(F)^4 + 336*F^(b*c^3 + a)*b^3*c^3*d^6
*log(F)^3 - 12*F^(b*c^3 + a)*b^2*d^6*log(F)^2)*x^6 + 3*(1001*F^(b
*c^3 + a)*b^5*c^10*d^5*log(F)^5 - 1320*F^(b*c^3 + a)*b^4*c^7*d^5*
log(F)^4 + 840*F^(b*c^3 + a)*b^3*c^4*d^5*log(F)^3 - 120*F^(b*c^3
+ a)*b^2*c*d^5*log(F)^2)*x^5 + 120*F^(b*c^3 + a)*b*c^3*log(F) + 1
5*(91*F^(b*c^3 + a)*b^5*c^11*d^4*log(F)^5 - 165*F^(b*c^3 + a)*b^4
*c^8*d^4*log(F)^4 + 168*F^(b*c^3 + a)*b^3*c^5*d^4*log(F)^3 - 60*F
^(b*c^3 + a)*b^2*c^2*d^4*log(F)^2)*x^4 + 5*(91*F^(b*c^3 + a)*b^5*
c^12*d^3*log(F)^5 - 220*F^(b*c^3 + a)*b^4*c^9*d^3*log(F)^4 + 336*
F^(b*c^3 + a)*b^3*c^6*d^3*log(F)^3 - 240*F^(b*c^3 + a)*b^2*c^3*d^
3*log(F)^2 + 24*F^(b*c^3 + a)*b*d^3*log(F))*x^3 + 15*(7*F^(b*c^3
+ a)*b^5*c^13*d^2*log(F)^5 - 22*F^(b*c^3 + a)*b^4*c^10*d^2*log(F)
^4 + 48*F^(b*c^3 + a)*b^3*c^7*d^2*log(F)^3 - 60*F^(b*c^3 + a)*b^2
*c^4*d^2*log(F)^2 + 24*F^(b*c^3 + a)*b*c*d^2*log(F))*x^2 + 15*(F^
(b*c^3 + a)*b^5*c^14*d*log(F)^5 - 4*F^(b*c^3 + a)*b^4*c^11*d*log(
F)^4 + 12*F^(b*c^3 + a)*b^3*c^8*d*log(F)^3 - 24*F^(b*c^3 + a)*b^2
*c^5*d*log(F)^2 + 24*F^(b*c^3 + a)*b*c^2*d*log(F))*x - 120*F^(b*c
^3 + a))*e^(b*d^3*x^3*log(F) + 3*b*c*d^2*x^2*log(F) + 3*b*c^2*d*x
*log(F))/(b^6*d*log(F)^6)
```

Fricas [A] time = 0.264819, size = 929, normalized size = 29.97

$$\left(\left(b^5d^{15}x^{15} + 15\,b^5cd^{14}x^{14} + 105\,b^5c^2d^{13}x^{13} + 455\,b^5c^3d^{12}x^{12} + 1365\,b^5c^4d^{11}x^{11} + 3003\,b^5c^5d^{10}x^{10} + 5005\,b^5c^6d^9x^9 + 6435\,b^5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^17*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*((b^5*d^15*x^15 + 15*b^5*c*d^14*x^14 + 105*b^5*c^2*d^13*x^13
+ 455*b^5*c^3*d^12*x^12 + 1365*b^5*c^4*d^11*x^11 + 3003*b^5*c^5*d
^10*x^10 + 5005*b^5*c^6*d^9*x^9 + 6435*b^5*c^7*d^8*x^8 + 6435*b^5
*c^8*d^7*x^7 + 5005*b^5*c^9*d^6*x^6 + 3003*b^5*c^10*d^5*x^5 + 136
5*b^5*c^11*d^4*x^4 + 455*b^5*c^12*d^3*x^3 + 105*b^5*c^13*d^2*x^2
+ 15*b^5*c^14*d*x + b^5*c^15)*log(F)^5 - 5*(b^4*d^12*x^12 + 12*b^
4*c*d^11*x^11 + 66*b^4*c^2*d^10*x^10 + 220*b^4*c^3*d^9*x^9 + 495*
b^4*c^4*d^8*x^8 + 792*b^4*c^5*d^7*x^7 + 924*b^4*c^6*d^6*x^6 + 792
*b^4*c^7*d^5*x^5 + 495*b^4*c^8*d^4*x^4 + 220*b^4*c^9*d^3*x^3 + 66
*b^4*c^10*d^2*x^2 + 12*b^4*c^11*d*x + b^4*c^12)*log(F)^4 + 20*(b^
3*d^9*x^9 + 9*b^3*c*d^8*x^8 + 36*b^3*c^2*d^7*x^7 + 84*b^3*c^3*d^6
*x^6 + 126*b^3*c^4*d^5*x^5 + 126*b^3*c^5*d^4*x^4 + 84*b^3*c^6*d^3
*x^3 + 36*b^3*c^7*d^2*x^2 + 9*b^3*c^8*d*x + b^3*c^9)*log(F)^3 - 6
0*(b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2*c^
3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*log(F)^
2 + 120*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F)
- 120)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a)/(b
^6*d*log(F)^6)
```

Sympy [A] time = 1.81329, size = 1171, normalized size = 37.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**17,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**3)*(b**5*c**15*log(F)**5 + 15*b**
5*c**14*d*x*log(F)**5 + 105*b**5*c**13*d**2*x**2*log(F)**5 + 455*
b**5*c**12*d**3*x**3*log(F)**5 + 1365*b**5*c**11*d**4*x**4*log(F)
**5 + 3003*b**5*c**10*d**5*x**5*log(F)**5 + 5005*b**5*c**9*d**6*x
**6*log(F)**5 + 6435*b**5*c**8*d**7*x**7*log(F)**5 + 6435*b**5*c*
*7*d**8*x**8*log(F)**5 + 5005*b**5*c**6*d**9*x**9*log(F)**5 + 300
3*b**5*c**5*d**10*x**10*log(F)**5 + 1365*b**5*c**4*d**11*x**11*lo
g(F)**5 + 455*b**5*c**3*d**12*x**12*log(F)**5 + 105*b**5*c**2*d**
13*x**13*log(F)**5 + 15*b**5*c*d**14*x**14*log(F)**5 + b**5*d**15
*x**15*log(F)**5 - 5*b**4*c**12*log(F)**4 - 60*b**4*c**11*d*x*log
(F)**4 - 330*b**4*c**10*d**2*x**2*log(F)**4 - 1100*b**4*c**9*d**3
*x**3*log(F)**4 - 2475*b**4*c**8*d**4*x**4*log(F)**4 - 3960*b**4*
c**7*d**5*x**5*log(F)**4 - 4620*b**4*c**6*d**6*x**6*log(F)**4 - 3
960*b**4*c**5*d**7*x**7*log(F)**4 - 2475*b**4*c**4*d**8*x**8*log(
F)**4 - 1100*b**4*c**3*d**9*x**9*log(F)**4 - 330*b**4*c**2*d**10*
x**10*log(F)**4 - 60*b**4*c*d**11*x**11*log(F)**4 - 5*b**4*d**12*
x**12*log(F)**4 + 20*b**3*c**9*log(F)**3 + 180*b**3*c**8*d*x*log(
F)**3 + 720*b**3*c**7*d**2*x**2*log(F)**3 + 1680*b**3*c**6*d**3*x
**3*log(F)**3 + 2520*b**3*c**5*d**4*x**4*log(F)**3 + 2520*b**3*c*
*4*d**5*x**5*log(F)**3 + 1680*b**3*c**3*d**6*x**6*log(F)**3 + 720
*b**3*c**2*d**7*x**7*log(F)**3 + 180*b**3*c*d**8*x**8*log(F)**3 +
 20*b**3*d**9*x**9*log(F)**3 - 60*b**2*c**6*log(F)**2 - 360*b**2*
c**5*d*x*log(F)**2 - 900*b**2*c**4*d**2*x**2*log(F)**2 - 1200*b**
2*c**3*d**3*x**3*log(F)**2 - 900*b**2*c**2*d**4*x**4*log(F)**2 -
360*b**2*c*d**5*x**5*log(F)**2 - 60*b**2*d**6*x**6*log(F)**2 + 12
```

```
0*b*c**3*log(F) + 360*b*c**2*d*x*log(F) + 360*b*c*d**2*x**2*log(F
) + 120*b*d**3*x**3*log(F) - 120)/(3*b**6*d*log(F)**6), Ne(3*b**6
*d*log(F)**6, 0)), (c**17*x + 17*c**16*d*x**2/2 + 136*c**15*d**2*
x**3/3 + 170*c**14*d**3*x**4 + 476*c**13*d**4*x**5 + 3094*c**12*d
**5*x**6/3 + 1768*c**11*d**6*x**7 + 2431*c**10*d**7*x**8 + 24310*
c**9*d**8*x**9/9 + 2431*c**8*d**9*x**10 + 1768*c**7*d**10*x**11 +
 3094*c**6*d**11*x**12/3 + 476*c**5*d**12*x**13 + 170*c**4*d**13*
x**14 + 136*c**3*d**14*x**15/3 + 17*c**2*d**15*x**16/2 + c*d**16*
x**17 + d**17*x**18/18, True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^17*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.282 $\int F^{a+b(c+dx)^3}(c+dx)^{14}\,dx$

Optimal. Leaf size=31

$$\frac{F^a\text{Gamma}\left(5,-b\log(F)(c+dx)^3\right)}{3b^5d\log^5(F)}$$

```
[Out] (F^a*Gamma[5, -(b*(c + d*x)^3*Log[F])])/(3*b^5*d*Log[F]^5)
```

Rubi [A] time = 0.1068, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(5,-b\log(F)(c+dx)^3\right)}{3b^5d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^14,x]

[Out] (F^a*Gamma[5, -(b*(c + d*x)^3*Log[F])])/(3*b^5*d*Log[F]^5)
```

Rubi in Sympy [A] time = 6.88511, size = 29, normalized size = 0.94

$$\frac{F^a\left(5,-b\left(c+dx\right)^3\log\left(F\right)\right)}{3b^5d\log\left(F\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**14,x)

[Out] F**a*Gamma(5, -b*(c + d*x)**3*log(F))/(3*b**5*d*log(F)**5)
```

Mathematica [B] time = 0.0859385, size = 88, normalized size = 2.84

$$\frac{F^{a+b(c+dx)^3}\left(b^4\log^4(F)(c+dx)^{12}-4b^3\log^3(F)(c+dx)^9+12b^2\log^2(F)(c+dx)^6-24b\log(F)(c+dx)^3+24\right)}{3b^5d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^14,x]

[Out] (F^(a + b*(c + d*x)^3)*(24 - 24*b*(c + d*x)^3*Log[F] + 12*b^2*(c
+ d*x)^6*Log[F]^2 - 4*b^3*(c + d*x)^9*Log[F]^3 + b^4*(c + d*x)^12
*Log[F]^4))/(3*b^5*d*Log[F]^5)
```

Maple [B] time = 0.028, size = 584, normalized size = 18.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^14,x)
```

```
[Out] 1/3*(24-24*ln(F)*b*d^3*x^3-24*ln(F)*b*c^3-72*ln(F)*b*c^2*d*x-72*l
n(F)*b*c*d^2*x^2+d^12*x^12*ln(F)^4*b^4-4*d^9*x^9*ln(F)^3*b^3+12*d
^6*x^6*ln(F)^2*b^2-144*c^2*d^7*x^7*ln(F)^3*b^3+12*ln(F)^4*b^4*c^1
1*d*x-336*ln(F)^3*b^3*c^3*d^6*x^6-504*ln(F)^3*b^3*c^4*d^5*x^5-504
*ln(F)^3*b^3*c^5*d^4*x^4-336*ln(F)^3*b^3*c^6*d^3*x^3-144*ln(F)^3*
b^3*c^7*d^2*x^2-36*ln(F)^3*b^3*c^8*d*x+72*c*d^5*x^5*ln(F)^2*b^2+1
80*c^2*d^4*x^4*ln(F)^2*b^2+240*ln(F)^2*b^2*c^3*d^3*x^3+180*ln(F)^
2*b^2*c^4*d^2*x^2+72*ln(F)^2*b^2*c^5*d*x+ln(F)^4*b^4*c^12-4*ln(F)
^3*b^3*c^9+12*c*d^11*x^11*ln(F)^4*b^4+66*c^2*d^10*x^10*ln(F)^4*b^
4+220*ln(F)^4*b^4*c^3*d^9*x^9+495*ln(F)^4*b^4*c^4*d^8*x^8+792*ln(
F)^4*b^4*c^5*d^7*x^7+924*ln(F)^4*b^4*c^6*d^6*x^6+792*ln(F)^4*b^4*
c^7*d^5*x^5+495*ln(F)^4*b^4*c^8*d^4*x^4+220*ln(F)^4*b^4*c^9*d^3*x
^3-36*c*d^8*x^8*ln(F)^3*b^3+66*ln(F)^4*b^4*c^10*d^2*x^2+12*ln(F)^
2*b^2*c^6)*F^(b*d^3*x^3+3*b*c*d^2*x^2+3*b*c^2*d*x+b*c^3+a)/d/ln(F
)^5/b^5
```

Maxima [A] time = 1.18743, size = 1180, normalized size = 38.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^14*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*(F^(b*c^3 + a)*b^4*d^12*x^12*log(F)^4 + 12*F^(b*c^3 + a)*b^4*
c*d^11*x^11*log(F)^4 + 66*F^(b*c^3 + a)*b^4*c^2*d^10*x^10*log(F)^
4 + F^(b*c^3 + a)*b^4*c^12*log(F)^4 - 4*F^(b*c^3 + a)*b^3*c^9*log
(F)^3 + 12*F^(b*c^3 + a)*b^2*c^6*log(F)^2 + 4*(55*F^(b*c^3 + a)*b
^4*c^3*d^9*log(F)^4 - F^(b*c^3 + a)*b^3*d^9*log(F)^3)*x^9 + 9*(55
*F^(b*c^3 + a)*b^4*c^4*d^8*log(F)^4 - 4*F^(b*c^3 + a)*b^3*c*d^8*l
og(F)^3)*x^8 + 72*(11*F^(b*c^3 + a)*b^4*c^5*d^7*log(F)^4 - 2*F^(b
*c^3 + a)*b^3*c^2*d^7*log(F)^3)*x^7 + 12*(77*F^(b*c^3 + a)*b^4*c^
6*d^6*log(F)^4 - 28*F^(b*c^3 + a)*b^3*c^3*d^6*log(F)^3 + F^(b*c^3
 + a)*b^2*d^6*log(F)^2)*x^6 + 72*(11*F^(b*c^3 + a)*b^4*c^7*d^5*lo
g(F)^4 - 7*F^(b*c^3 + a)*b^3*c^4*d^5*log(F)^3 + F^(b*c^3 + a)*b^2
*c*d^5*log(F)^2)*x^5 - 24*F^(b*c^3 + a)*b*c^3*log(F) + 9*(55*F^(b
*c^3 + a)*b^4*c^8*d^4*log(F)^4 - 56*F^(b*c^3 + a)*b^3*c^5*d^4*log
(F)^3 + 20*F^(b*c^3 + a)*b^2*c^2*d^4*log(F)^2)*x^4 + 4*(55*F^(b*c
^3 + a)*b^4*c^9*d^3*log(F)^4 - 84*F^(b*c^3 + a)*b^3*c^6*d^3*log(F
)^3 + 60*F^(b*c^3 + a)*b^2*c^3*d^3*log(F)^2 - 6*F^(b*c^3 + a)*b*d
^3*log(F))*x^3 + 6*(11*F^(b*c^3 + a)*b^4*c^10*d^2*log(F)^4 - 24*F
^(b*c^3 + a)*b^3*c^7*d^2*log(F)^3 + 30*F^(b*c^3 + a)*b^2*c^4*d^2*
log(F)^2 - 12*F^(b*c^3 + a)*b*c*d^2*log(F))*x^2 + 12*(F^(b*c^3 +
a)*b^4*c^11*d*log(F)^4 - 3*F^(b*c^3 + a)*b^3*c^8*d*log(F)^3 + 6*F
^(b*c^3 + a)*b^2*c^5*d*log(F)^2 - 6*F^(b*c^3 + a)*b*c^2*d*log(F))
*x + 24*F^(b*c^3 + a))*e^(b*d^3*x^3*log(F) + 3*b*c*d^2*x^2*log(F)
 + 3*b*c^2*d*x*log(F))/(b^5*d*log(F)^5)
```

Fricas [A] time = 0.268168, size = 640, normalized size = 20.65

$$\frac{\left(\left(b^4 d^{12} x^{12} + 12\, b^4 c d^{11} x^{11} + 66\, b^4 c^2 d^{10} x^{10} + 220\, b^4 c^3 d^9 x^9 + 495\, b^4 c^4 d^8 x^8 + 792\, b^4 c^5 d^7 x^7 + 924\, b^4 c^6 d^6 x^6 + 792\, b^4 c^7 d^5 x^5 + 4\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^14*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*((b^4*d^12*x^12 + 12*b^4*c*d^11*x^11 + 66*b^4*c^2*d^10*x^10 +
 220*b^4*c^3*d^9*x^9 + 495*b^4*c^4*d^8*x^8 + 792*b^4*c^5*d^7*x^7
+ 924*b^4*c^6*d^6*x^6 + 792*b^4*c^7*d^5*x^5 + 495*b^4*c^8*d^4*x^4
```

```
 + 220*b^4*c^9*d^3*x^3 + 66*b^4*c^10*d^2*x^2 + 12*b^4*c^11*d*x +
b^4*c^12)*log(F)^4 - 4*(b^3*d^9*x^9 + 9*b^3*c*d^8*x^8 + 36*b^3*c^
2*d^7*x^7 + 84*b^3*c^3*d^6*x^6 + 126*b^3*c^4*d^5*x^5 + 126*b^3*c^
5*d^4*x^4 + 84*b^3*c^6*d^3*x^3 + 36*b^3*c^7*d^2*x^2 + 9*b^3*c^8*d
*x + b^3*c^9)*log(F)^3 + 12*(b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b
^2*c^2*d^4*x^4 + 20*b^2*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*
c^5*d*x + b^2*c^6)*log(F)^2 - 24*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b
*c^2*d*x + b*c^3)*log(F) + 24)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b
*c^2*d*x + b*c^3 + a)/(b^5*d*log(F)^5)
```

Sympy [A] time = 1.38299, size = 823, normalized size = 26.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**14,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**3)*(b**4*c**12*log(F)**4 + 12*b**
4*c**11*d*x*log(F)**4 + 66*b**4*c**10*d**2*x**2*log(F)**4 + 220*b
**4*c**9*d**3*x**3*log(F)**4 + 495*b**4*c**8*d**4*x**4*log(F)**4
+ 792*b**4*c**7*d**5*x**5*log(F)**4 + 924*b**4*c**6*d**6*x**6*log
(F)**4 + 792*b**4*c**5*d**7*x**7*log(F)**4 + 495*b**4*c**4*d**8*x
**8*log(F)**4 + 220*b**4*c**3*d**9*x**9*log(F)**4 + 66*b**4*c**2*
d**10*x**10*log(F)**4 + 12*b**4*c*d**11*x**11*log(F)**4 + b**4*d*
*12*x**12*log(F)**4 - 4*b**3*c**9*log(F)**3 - 36*b**3*c**8*d*x*lo
g(F)**3 - 144*b**3*c**7*d**2*x**2*log(F)**3 - 336*b**3*c**6*d**3*
x**3*log(F)**3 - 504*b**3*c**5*d**4*x**4*log(F)**3 - 504*b**3*c**
4*d**5*x**5*log(F)**3 - 336*b**3*c**3*d**6*x**6*log(F)**3 - 144*b
**3*c**2*d**7*x**7*log(F)**3 - 36*b**3*c*d**8*x**8*log(F)**3 - 4*
b**3*d**9*x**9*log(F)**3 + 12*b**2*c**6*log(F)**2 + 72*b**2*c**5*
d*x*log(F)**2 + 180*b**2*c**4*d**2*x**2*log(F)**2 + 240*b**2*c**3
*d**3*x**3*log(F)**2 + 180*b**2*c**2*d**4*x**4*log(F)**2 + 72*b**
2*c*d**5*x**5*log(F)**2 + 12*b**2*d**6*x**6*log(F)**2 - 24*b*c**3
*log(F) - 72*b*c**2*d*x*log(F) - 72*b*c*d**2*x**2*log(F) - 24*b*d
**3*x**3*log(F) + 24)/(3*b**5*d*log(F)**5), Ne(3*b**5*d*log(F)**5
, 0)), (c**14*x + 7*c**13*d*x**2 + 91*c**12*d**2*x**3/3 + 91*c**1
1*d**3*x**4 + 1001*c**10*d**4*x**5/5 + 1001*c**9*d**5*x**6/3 + 42
9*c**8*d**6*x**7 + 429*c**7*d**7*x**8 + 1001*c**6*d**8*x**9/3 + 1
001*c**5*d**9*x**10/5 + 91*c**4*d**10*x**11 + 91*c**3*d**11*x**12
/3 + 7*c**2*d**12*x**13 + c*d**13*x**14 + d**14*x**15/15, True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^14*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.283 $\int F^{a+b(c+dx)^3}(c+dx)^{11}\,dx$

Optimal. Leaf size=124

$$-\frac{2F^{a+b(c+dx)^3}}{b^4d\log^4(F)}+\frac{2(c+dx)^3F^{a+b(c+dx)^3}}{b^3d\log^3(F)}-\frac{(c+dx)^6F^{a+b(c+dx)^3}}{b^2d\log^2(F)}+\frac{(c+dx)^9F^{a+b(c+dx)^3}}{3bd\log(F)}$$

```
[Out] (-2*F^(a + b*(c + d*x)^3))/(b^4*d*Log[F]^4) + (2*F^(a + b*(c + d*
x)^3)*(c + d*x)^3)/(b^3*d*Log[F]^3) - (F^(a + b*(c + d*x)^3)*(c +
 d*x)^6)/(b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^3)*(c + d*x)^9)/(
3*b*d*Log[F])
```

Rubi [A] time = 0.436456, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{2F^{a+b(c+dx)^3}}{b^4d\log^4(F)}+\frac{2(c+dx)^3F^{a+b(c+dx)^3}}{b^3d\log^3(F)}-\frac{(c+dx)^6F^{a+b(c+dx)^3}}{b^2d\log^2(F)}+\frac{(c+dx)^9F^{a+b(c+dx)^3}}{3bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^11,x]
```

```
[Out] (-2*F^(a + b*(c + d*x)^3))/(b^4*d*Log[F]^4) + (2*F^(a + b*(c + d*
x)^3)*(c + d*x)^3)/(b^3*d*Log[F]^3) - (F^(a + b*(c + d*x)^3)*(c +
 d*x)^6)/(b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^3)*(c + d*x)^9)/(
3*b*d*Log[F])
```

Rubi in Sympy [A] time = 28.3812, size = 109, normalized size = 0.88

$$\frac{F^{a+b(c+dx)^3}(c+dx)^9}{3bd\log(F)}-\frac{F^{a+b(c+dx)^3}(c+dx)^6}{b^2d\log(F)^2}+\frac{2F^{a+b(c+dx)^3}(c+dx)^3}{b^3d\log(F)^3}-\frac{2F^{a+b(c+dx)^3}}{b^4d\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**11,x)
```

```
[Out] F**(a + b*(c + d*x)**3)*(c + d*x)**9/(3*b*d*log(F)) - F**(a + b*(
c + d*x)**3)*(c + d*x)**6/(b**2*d*log(F)**2) + 2*F**(a + b*(c + d
*x)**3)*(c + d*x)**3/(b**3*d*log(F)**3) - 2*F**(a + b*(c + d*x)**
3)/(b**4*d*log(F)**4)
```

Mathematica [A] time = 0.0600826, size = 72, normalized size = 0.58

$$\frac{F^{a+b(c+dx)^3}\left(b^3\log^3(F)(c+dx)^9-3b^2\log^2(F)(c+dx)^6+6b\log(F)(c+dx)^3-6\right)}{3b^4d\log^4(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^11,x]
```

```
[Out] (F^(a + b*(c + d*x)^3)*(-6 + 6*b*(c + d*x)^3*Log[F] - 3*b^2*(c +
d*x)^6*Log[F]^2 + b^3*(c + d*x)^9*Log[F]^3))/(3*b^4*d*Log[F]^4)
```

Maple [B] time = 0.02, size = 365, normalized size = 2.9

$$\frac{\left(d^{9}x^{9}\left(\ln\left(F\right)\right)^{3}b^{3}+9\,cd^{8}x^{8}\left(\ln\left(F\right)\right)^{3}b^{3}+36\,c^{2}d^{7}x^{7}\left(\ln\left(F\right)\right)^{3}b^{3}+84\,\left(\ln\left(F\right)\right)^{3}b^{3}c^{3}d^{6}x^{6}+126\,\left(\ln\left(F\right)\right)^{3}b^{3}c^{4}d^{5}x^{5}+126\,\left(\ln\left(F\right)\right)^{3}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^11,x)
```

```
[Out] 1/3*(d^9*x^9*ln(F)^3*b^3+9*c*d^8*x^8*ln(F)^3*b^3+36*c^2*d^7*x^7*l
n(F)^3*b^3+84*ln(F)^3*b^3*c^3*d^6*x^6+126*ln(F)^3*b^3*c^4*d^5*x^5
+126*ln(F)^3*b^3*c^5*d^4*x^4+84*ln(F)^3*b^3*c^6*d^3*x^3+36*ln(F)^
3*b^3*c^7*d^2*x^2+9*ln(F)^3*b^3*c^8*d*x-3*d^6*x^6*ln(F)^2*b^2+ln(
F)^3*b^3*c^9-18*c*d^5*x^5*ln(F)^2*b^2-45*c^2*d^4*x^4*ln(F)^2*b^2-
60*ln(F)^2*b^2*c^3*d^3*x^3-45*ln(F)^2*b^2*c^4*d^2*x^2-18*ln(F)^2*
b^2*c^5*d*x-3*ln(F)^2*b^2*c^6+6*ln(F)*b*d^3*x^3+18*ln(F)*b*c*d^2*
x^2+18*ln(F)*b*c^2*d*x+6*ln(F)*b*c^3-6)*F^(b*d^3*x^3+3*b*c*d^2*x^
2+3*b*c^2*d*x+b*c^3+a)/ln(F)^4/b^4/d
```

Maxima [A] time = 1.18238, size = 749, normalized size = 6.04

$$\frac{\left(F^{bc^{3}+a}b^{3}d^{9}x^{9}\log\left(F\right)^{3}+9\,F^{bc^{3}+a}b^{3}cd^{8}x^{8}\log\left(F\right)^{3}+36\,F^{bc^{3}+a}b^{3}c^{2}d^{7}x^{7}\log\left(F\right)^{3}+F^{bc^{3}+a}b^{3}c^{9}\log\left(F\right)^{3}-3\,F^{bc^{3}+a}b^{2}c^{6}\log\left(F\right)^{2}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*(F^(b*c^3 + a)*b^3*d^9*x^9*log(F)^3 + 9*F^(b*c^3 + a)*b^3*c*d
^8*x^8*log(F)^3 + 36*F^(b*c^3 + a)*b^3*c^2*d^7*x^7*log(F)^3 + F^(
b*c^3 + a)*b^3*c^9*log(F)^3 - 3*F^(b*c^3 + a)*b^2*c^6*log(F)^2 +
3*(28*F^(b*c^3 + a)*b^3*c^3*d^6*log(F)^3 - F^(b*c^3 + a)*b^2*d^6*
log(F)^2)*x^6 + 18*(7*F^(b*c^3 + a)*b^3*c^4*d^5*log(F)^3 - F^(b*c
^3 + a)*b^2*c*d^5*log(F)^2)*x^5 + 6*F^(b*c^3 + a)*b*c^3*log(F) +
9*(14*F^(b*c^3 + a)*b^3*c^5*d^4*log(F)^3 - 5*F^(b*c^3 + a)*b^2*c^
2*d^4*log(F)^2)*x^4 + 6*(14*F^(b*c^3 + a)*b^3*c^6*d^3*log(F)^3 -
10*F^(b*c^3 + a)*b^2*c^3*d^3*log(F)^2 + F^(b*c^3 + a)*b*d^3*log(F
))*x^3 + 9*(4*F^(b*c^3 + a)*b^3*c^7*d^2*log(F)^3 - 5*F^(b*c^3 + a
)*b^2*c^4*d^2*log(F)^2 + 2*F^(b*c^3 + a)*b*c*d^2*log(F))*x^2 + 9*
(F^(b*c^3 + a)*b^3*c^8*d*log(F)^3 - 2*F^(b*c^3 + a)*b^2*c^5*d*log
(F)^2 + 2*F^(b*c^3 + a)*b*c^2*d*log(F))*x - 6*F^(b*c^3 + a))*e^(b
*d^3*x^3*log(F) + 3*b*c*d^2*x^2*log(F) + 3*b*c^2*d*x*log(F))/(b^4
*d*log(F)^4)
```

Fricas [A] time = 0.255276, size = 408, normalized size = 3.29

$$\frac{\left(\left(b^{3}d^{9}x^{9}+9\,b^{3}cd^{8}x^{8}+36\,b^{3}c^{2}d^{7}x^{7}+84\,b^{3}c^{3}d^{6}x^{6}+126\,b^{3}c^{4}d^{5}x^{5}+126\,b^{3}c^{5}d^{4}x^{4}+84\,b^{3}c^{6}d^{3}x^{3}+36\,b^{3}c^{7}d^{2}x^{2}+9\,b^{3}c^{8}dx+\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*((b^3*d^9*x^9 + 9*b^3*c*d^8*x^8 + 36*b^3*c^2*d^7*x^7 + 84*b^3
*c^3*d^6*x^6 + 126*b^3*c^4*d^5*x^5 + 126*b^3*c^5*d^4*x^4 + 84*b^3
*c^6*d^3*x^3 + 36*b^3*c^7*d^2*x^2 + 9*b^3*c^8*d*x + b^3*c^9)*log(
F)^3 - 3*(b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20
```

```
*b^2*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*
log(F)^2 + 6*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*lo
g(F) - 6)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a)
/(b^4*d*log(F)^4)
```

Sympy [A] time = 1.06771, size = 537, normalized size = 4.33

$$\begin{cases} \frac{F^{a+b(c+dx)^3}\left(b^3c^9\log(F)^3+9b^3c^8dx\log(F)^3+36b^3c^7d^2x^2\log(F)^3+84b^3c^6d^3x^3\log(F)^3+126b^3c^5d^4x^4\log(F)^3+126b^3c^4d^5x^5\log(F)^3+84b^3c^3d^6x^6\log(F)^3+36 \right.}{} \\ c^{11}x+\frac{11c^{10}dx^2}{2}+\frac{55c^9d^2x^3}{3}+\frac{165c^8d^3x^4}{4}+66c^7d^4x^5+77c^6d^5x^6+66c^5d^6x^7+\frac{165c^4d^7x^8}{4}+\frac{55c^3d^8x^9}{3}+\frac{11c^2d^9x^{10}}{2}+cd^{10}x^{11}+\frac{d^{11}x^{12}}{12} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**11,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**3)*(b**3*c**9*log(F)**3 + 9*b**3*
c**8*d*x*log(F)**3 + 36*b**3*c**7*d**2*x**2*log(F)**3 + 84*b**3*c
**6*d**3*x**3*log(F)**3 + 126*b**3*c**5*d**4*x**4*log(F)**3 + 126
*b**3*c**4*d**5*x**5*log(F)**3 + 84*b**3*c**3*d**6*x**6*log(F)**3
 + 36*b**3*c**2*d**7*x**7*log(F)**3 + 9*b**3*c*d**8*x**8*log(F)**
3 + b**3*d**9*x**9*log(F)**3 - 3*b**2*c**6*log(F)**2 - 18*b**2*c*
*5*d*x*log(F)**2 - 45*b**2*c**4*d**2*x**2*log(F)**2 - 60*b**2*c**
3*d**3*x**3*log(F)**2 - 45*b**2*c**2*d**4*x**4*log(F)**2 - 18*b**
2*c*d**5*x**5*log(F)**2 - 3*b**2*d**6*x**6*log(F)**2 + 6*b*c**3*l
og(F) + 18*b*c**2*d*x*log(F) + 18*b*c*d**2*x**2*log(F) + 6*b*d**3
*x**3*log(F) - 6)/(3*b**4*d*log(F)**4), Ne(3*b**4*d*log(F)**4, 0)
), (c**11*x + 11*c**10*d*x**2/2 + 55*c**9*d**2*x**3/3 + 165*c**8*
d**3*x**4/4 + 66*c**7*d**4*x**5 + 77*c**6*d**5*x**6 + 66*c**5*d**
6*x**7 + 165*c**4*d**7*x**8/4 + 55*c**3*d**8*x**9/3 + 11*c**2*d**
9*x**10/2 + c*d**10*x**11 + d**11*x**12/12, True))
```

GIAC/XCAS [A] time = 0.25478, size = 1, normalized size = 0.01

$$\textit{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] Done
```

3.284 $\int F^{a+b(c+dx)^3}(c+dx)^8\,dx$

Optimal. Leaf size=96

$$\frac{2F^{a+b(c+dx)^3}}{3b^3d\log^3(F)}-\frac{2(c+dx)^3F^{a+b(c+dx)^3}}{3b^2d\log^2(F)}+\frac{(c+dx)^6F^{a+b(c+dx)^3}}{3bd\log(F)}$$

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

Rubi [A] time = 0.321766, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{2F^{a+b(c+dx)^3}}{3b^3d\log^3(F)}-\frac{2(c+dx)^3F^{a+b(c+dx)^3}}{3b^2d\log^2(F)}+\frac{(c+dx)^6F^{a+b(c+dx)^3}}{3bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^8,x]
```

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

Rubi in Sympy [A] time = 18.9941, size = 83, normalized size = 0.86

$$\frac{F^{a+b(c+dx)^3}(c+dx)^6}{3bd\log(F)}-\frac{2F^{a+b(c+dx)^3}(c+dx)^3}{3b^2d\log(F)^2}+\frac{2F^{a+b(c+dx)^3}}{3b^3d\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**8,x)
```

```
[Out] F**(a + b*(c + d*x)**3)*(c + d*x)**6/(3*b*d*log(F)) - 2*F**(a + b
*(c + d*x)**3)*(c + d*x)**3/(3*b**2*d*log(F)**2) + 2*F**(a + b*(c
 + d*x)**3)/(3*b**3*d*log(F)**3)
```

Mathematica [A] time = 0.0526276, size = 56, normalized size = 0.58

$$\frac{F^{a+b(c+dx)^3}\left(b^2\log^2(F)(c+dx)^6-2b\log(F)(c+dx)^3+2\right)}{3b^3d\log^3(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^8,x]
```

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

Maple [B] time = 0.013, size = 200, normalized size = 2.1

$$\frac{\left(d^{6}x^{6}\left(\ln\left(F\right)\right)^{2}b^{2}+6\,cd^{5}x^{5}\left(\ln\left(F\right)\right)^{2}b^{2}+15\,c^{2}d^{4}x^{4}\left(\ln\left(F\right)\right)^{2}b^{2}+20\,\left(\ln\left(F\right)\right)^{2}b^{2}c^{3}d^{3}x^{3}+15\,\left(\ln\left(F\right)\right)^{2}b^{2}c^{4}d^{2}x^{2}+6\,\left(\ln\left(F\right)\right)^{2}b^{2}c}{3\,\left(\ln\left(F\right)\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^8,x)
```

```
[Out] 1/3*(d^6*x^6*ln(F)^2*b^2+6*c*d^5*x^5*ln(F)^2*b^2+15*c^2*d^4*x^4*l
n(F)^2*b^2+20*ln(F)^2*b^2*c^3*d^3*x^3+15*ln(F)^2*b^2*c^4*d^2*x^2+
6*ln(F)^2*b^2*c^5*d*x+ln(F)^2*b^2*c^6-2*ln(F)*b*d^3*x^3-6*ln(F)*b
*c*d^2*x^2-6*ln(F)*b*c^2*d*x-2*ln(F)*b*c^3+2)*F^(b*d^3*x^3+3*b*c*
d^2*x^2+3*b*c^2*d*x+b*c^3+a)/ln(F)^3/b^3/d
```

Maxima [A] time = 1.18287, size = 416, normalized size = 4.33

$$\left(F^{bc^{3}+a}b^{2}d^{6}x^{6}\log\left(F\right)^{2}+6\,F^{bc^{3}+a}b^{2}cd^{5}x^{5}\log\left(F\right)^{2}+15\,F^{bc^{3}+a}b^{2}c^{2}d^{4}x^{4}\log\left(F\right)^{2}+F^{bc^{3}+a}b^{2}c^{6}\log\left(F\right)^{2}-2\,F^{bc^{3}+a}bc^{3}\log\left(F\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*(F^(b*c^3 + a)*b^2*d^6*x^6*log(F)^2 + 6*F^(b*c^3 + a)*b^2*c*d
^5*x^5*log(F)^2 + 15*F^(b*c^3 + a)*b^2*c^2*d^4*x^4*log(F)^2 + F^(
b*c^3 + a)*b^2*c^6*log(F)^2 - 2*F^(b*c^3 + a)*b*c^3*log(F) + 2*(1
0*F^(b*c^3 + a)*b^2*c^3*d^3*log(F)^2 - F^(b*c^3 + a)*b*d^3*log(F)
)*x^3 + 3*(5*F^(b*c^3 + a)*b^2*c^4*d^2*log(F)^2 - 2*F^(b*c^3 + a)
*b*c*d^2*log(F))*x^2 + 6*(F^(b*c^3 + a)*b^2*c^5*d*log(F)^2 - F^(b
*c^3 + a)*b*c^2*d*log(F))*x + 2*F^(b*c^3 + a))*e^(b*d^3*x^3*log(F
) + 3*b*c*d^2*x^2*log(F) + 3*b*c^2*d*x*log(F))/(b^3*d*log(F)^3)
```

Fricas [A] time = 0.262132, size = 232, normalized size = 2.42

$$\frac{\left(\left(b^{2}d^{6}x^{6}+6\,b^{2}cd^{5}x^{5}+15\,b^{2}c^{2}d^{4}x^{4}+20\,b^{2}c^{3}d^{3}x^{3}+15\,b^{2}c^{4}d^{2}x^{2}+6\,b^{2}c^{5}dx+b^{2}c^{6}\right)\log\left(F\right)^{2}-2\,\left(bd^{3}x^{3}+3\,bcd^{2}x^{2}+3\,bc^{2}dx\right.}{3\,b^{3}d\log\left(F\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*((b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2
*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*log(
F)^2 - 2*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F)
 + 2)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a)/(b^
3*d*log(F)^3)
```

Sympy [A] time = 0.795206, size = 306, normalized size = 3.19

$$\begin{cases}\frac{F^{a+b(c+dx)^{3}}\left(b^{2}c^{6}\log\left(F\right)^{2}+6b^{2}c^{5}dx\log\left(F\right)^{2}+15b^{2}c^{4}d^{2}x^{2}\log\left(F\right)^{2}+20b^{2}c^{3}d^{3}x^{3}\log\left(F\right)^{2}+15b^{2}c^{2}d^{4}x^{4}\log\left(F\right)^{2}+6b^{2}cd^{5}x^{5}\log\left(F\right)^{2}+b^{2}d^{6}x^{6}\log\left(F\right)^{2}-2bc^{3}\log\left(F\right.}{3b^{3}d\log\left(F\right)^{3}} \\ c^{8}x+4c^{7}dx^{2}+\frac{28c^{6}d^{2}x^{3}}{3}+14c^{5}d^{3}x^{4}+14c^{4}d^{4}x^{5}+\frac{28c^{3}d^{5}x^{6}}{3}+4c^{2}d^{6}x^{7}+cd^{7}x^{8}+\frac{d^{8}x^{9}}{9}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**8,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**3)*(b**2*c**6*log(F)**2 + 6*b**2*
c**5*d*x*log(F)**2 + 15*b**2*c**4*d**2*x**2*log(F)**2 + 20*b**2*c
**3*d**3*x**3*log(F)**2 + 15*b**2*c**2*d**4*x**4*log(F)**2 + 6*b*
*2*c*d**5*x**5*log(F)**2 + b**2*d**6*x**6*log(F)**2 - 2*b*c**3*lo
g(F) - 6*b*c**2*d*x*log(F) - 6*b*c*d**2*x**2*log(F) - 2*b*d**3*x*
*3*log(F) + 2)/(3*b**3*d*log(F)**3), Ne(3*b**3*d*log(F)**3, 0)),
(c**8*x + 4*c**7*d*x**2 + 28*c**6*d**2*x**3/3 + 14*c**5*d**3*x**4
 + 14*c**4*d**4*x**5 + 28*c**3*d**5*x**6/3 + 4*c**2*d**6*x**7 + c
*d**7*x**8 + d**8*x**9/9, True))
```

GIAC/XCAS [A] time = 0.24777, size = 952, normalized size = 9.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] 1/3*(b^2*d^6*x^6*e^(b*d^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c
^2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F))*ln(F)^2 + 6*b^2*c*d^5*x^5*e
^(b*d^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c
^3*ln(F) + a*ln(F))*ln(F)^2 + 15*b^2*c^2*d^4*x^4*e^(b*d^3*x^3*ln(
F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c^3*ln(F) + a*ln
(F))*ln(F)^2 + 20*b^2*c^3*d^3*x^3*e^(b*d^3*x^3*ln(F) + 3*b*c*d^2*
x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F))*ln(F)^2 +
15*b^2*c^4*d^2*x^2*e^(b*d^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b
*c^2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F))*ln(F)^2 + 6*b^2*c^5*d*x*e
^(b*d^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c
^3*ln(F) + a*ln(F))*ln(F)^2 + b^2*c^6*e^(b*d^3*x^3*ln(F) + 3*b*c*
d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F))*ln(F)^
2 - 2*b*d^3*x^3*e^(b*d^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c^
2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F))*ln(F) - 6*b*c*d^2*x^2*e^(b*d
^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c^3*ln
(F) + a*ln(F))*ln(F) - 6*b*c^2*d*x*e^(b*d^3*x^3*ln(F) + 3*b*c*d^2
*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F))*ln(F) - 2
*b*c^3*e^(b*d^3*x^3*ln(F) + 3*b*c*d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(
F) + b*c^3*ln(F) + a*ln(F))*ln(F) + 2*e^(b*d^3*x^3*ln(F) + 3*b*c*
d^2*x^2*ln(F) + 3*b*c^2*d*x*ln(F) + b*c^3*ln(F) + a*ln(F)))/(b^3*
d*ln(F)^3)
```

3.285 $\int F^{a+b(c+dx)^3}(c+dx)^5\,dx$

Optimal. Leaf size=62

$$\frac{(c+dx)^3F^{a+b(c+dx)^3}}{3bd\log(F)}-\frac{F^{a+b(c+dx)^3}}{3b^2d\log^2(F)}$$

```
[Out] -F^(a + b*(c + d*x)^3)/(3*b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^3
)*(c + d*x)^3)/(3*b*d*Log[F])
```

Rubi [A] time = 0.208652, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{(c+dx)^3F^{a+b(c+dx)^3}}{3bd\log(F)}-\frac{F^{a+b(c+dx)^3}}{3b^2d\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^5,x]
```

```
[Out] -F^(a + b*(c + d*x)^3)/(3*b^2*d*Log[F]^2) + (F^(a + b*(c + d*x)^3
)*(c + d*x)^3)/(3*b*d*Log[F])
```

Rubi in Sympy [A] time = 11.2398, size = 49, normalized size = 0.79

$$\frac{F^{a+b(c+dx)^3}\left(c+dx\right)^3}{3bd\log\left(F\right)}-\frac{F^{a+b(c+dx)^3}}{3b^2d\log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**5,x)
```

```
[Out] F**(a + b*(c + d*x)**3)*(c + d*x)**3/(3*b*d*log(F)) - F**(a + b*(
c + d*x)**3)/(3*b**2*d*log(F)**2)
```

Mathematica [A] time = 0.0409354, size = 40, normalized size = 0.65

$$\frac{F^{a+b(c+dx)^3}\left(b\log(F)(c+dx)^3-1\right)}{3b^2d\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^5,x]
```

```
[Out] (F^(a + b*(c + d*x)^3)*(-1 + b*(c + d*x)^3*Log[F]))/(3*b^2*d*Log[
F]^2)
```

Maple [A] time = 0.013, size = 89, normalized size = 1.4

$$\frac{\left(\ln\left(F\right)bd^3x^3+3\ln\left(F\right)bcd^2x^2+3\ln\left(F\right)bc^2dx+\ln\left(F\right)bc^3-1\right)F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{3\left(\ln\left(F\right)\right)^2b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^5,x)
```

```
[Out] 1/3*(ln(F)*b*d^3*x^3+3*ln(F)*b*c*d^2*x^2+3*ln(F)*b*c^2*d*x+ln(F)*
b*c^3-1)*F^(b*d^3*x^3+3*b*c*d^2*x^2+3*b*c^2*d*x+b*c^3+a)/ln(F)^2/
b^2/d
```

Maxima [A] time = 1.22497, size = 180, normalized size = 2.9

$$\frac{\left(F^{bc^3+a}bd^3x^3\log\left(F\right)+3\,F^{bc^3+a}bcd^2x^2\log\left(F\right)+3\,F^{bc^3+a}bc^2dx\log\left(F\right)+F^{bc^3+a}bc^3\log\left(F\right)-F^{bc^3+a}\right)e^{\left(bd^3x^3\log(F)+3\,bcd^2x^2\log(\cdots\right.}}{3\,b^2d\log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*(F^(b*c^3 + a)*b*d^3*x^3*log(F) + 3*F^(b*c^3 + a)*b*c*d^2*x^2
*log(F) + 3*F^(b*c^3 + a)*b*c^2*d*x*log(F) + F^(b*c^3 + a)*b*c^3*
log(F) - F^(b*c^3 + a))*e^(b*d^3*x^3*log(F) + 3*b*c*d^2*x^2*log(F
) + 3*b*c^2*d*x*log(F))/(b^2*d*log(F)^2)
```

Fricas [A] time = 0.295004, size = 113, normalized size = 1.82

$$\frac{\left(\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\log\left(F\right)-1\right)F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{3\,b^2d\log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F) - 1
)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a)/(b^2*d*
log(F)^2)
```

Sympy [A] time = 0.565093, size = 144, normalized size = 2.32

$$\begin{cases}\frac{F^{a+b(c+dx)^3}\left(bc^3\log\left(F\right)+3bc^2dx\log\left(F\right)+3bcd^2x^2\log\left(F\right)+bd^3x^3\log\left(F\right)-1\right)}{3b^2d\log\left(F\right)^2} & \text{for } 3b^2d\log\left(F\right)^2\neq 0\\ c^5x+\frac{5c^4dx^2}{2}+\frac{10c^3d^2x^3}{3}+\frac{5c^2d^3x^4}{2}+cd^4x^5+\frac{d^5x^6}{6} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**5,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**3)*(b*c**3*log(F) + 3*b*c**2*d*x*
log(F) + 3*b*c*d**2*x**2*log(F) + b*d**3*x**3*log(F) - 1)/(3*b**2
*d*log(F)**2), Ne(3*b**2*d*log(F)**2, 0)), (c**5*x + 5*c**4*d*x**
2/2 + 10*c**3*d**2*x**3/3 + 5*c**2*d**3*x**4/2 + c*d**4*x**5 + d*
*5*x**6/6, True))
```

GIAC/XCAS [A] time = 0.249626, size = 1203, normalized size = 19.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] 1/6*(2*(2*(((d*x + c)^3*b*ln(abs(F)) - 1)*(pi^2*b^2*sign(F) - pi^
2*b^2 + 2*b^2*ln(abs(F))^2)/((pi^2*b^2*sign(F) - pi^2*b^2 + 2*b^2
*ln(abs(F))^2)^2 + 4*(pi*b^2*ln(abs(F))*sign(F) - pi*b^2*ln(abs(F
)))^2) + (pi*(d*x + c)^3*b*sign(F) - pi*(d*x + c)^3*b)*(pi*b^2*ln
(abs(F))*sign(F) - pi*b^2*ln(abs(F)))/((pi^2*b^2*sign(F) - pi^2*b
^2 + 2*b^2*ln(abs(F))^2)^2 + 4*(pi*b^2*ln(abs(F))*sign(F) - pi*b^
2*ln(abs(F)))^2))*cos(-1/2*pi*b*d^3*x^3*sign(F) + 1/2*pi*b*d^3*x^
3 - 3/2*pi*b*c*d^2*x^2*sign(F) + 3/2*pi*b*c*d^2*x^2 - 3/2*pi*b*c^
2*d*x*sign(F) + 3/2*pi*b*c^2*d*x - 1/2*pi*b*c^3*sign(F) + 1/2*pi*
b*c^3 - 1/2*pi*a*sign(F) + 1/2*pi*a) + ((pi*(d*x + c)^3*b*sign(F)
 - pi*(d*x + c)^3*b)*(pi^2*b^2*sign(F) - pi^2*b^2 + 2*b^2*ln(abs(
F))^2)/((pi^2*b^2*sign(F) - pi^2*b^2 + 2*b^2*ln(abs(F))^2)^2 + 4*
(pi*b^2*ln(abs(F))*sign(F) - pi*b^2*ln(abs(F)))^2) - 4*((d*x + c)
^3*b*ln(abs(F)) - 1)*(pi*b^2*ln(abs(F))*sign(F) - pi*b^2*ln(abs(F
)))/((pi^2*b^2*sign(F) - pi^2*b^2 + 2*b^2*ln(abs(F))^2)^2 + 4*(pi
*b^2*ln(abs(F))*sign(F) - pi*b^2*ln(abs(F)))^2))*sin(-1/2*pi*b*d^
3*x^3*sign(F) + 1/2*pi*b*d^3*x^3 - 3/2*pi*b*c*d^2*x^2*sign(F) + 3
/2*pi*b*c*d^2*x^2 - 3/2*pi*b*c^2*d*x*sign(F) + 3/2*pi*b*c^2*d*x -
 1/2*pi*b*c^3*sign(F) + 1/2*pi*b*c^3 - 1/2*pi*a*sign(F) + 1/2*pi*
a))*e^((d*x + c)^3*b*ln(abs(F)) + a*ln(abs(F))) - ((2*(d*x + c)^3
*b*i*ln(abs(F)) - pi*(d*x + c)^3*b*sign(F) + pi*(d*x + c)^3*b - 2
*i)*e^(1/2*(pi*(d*x + c)^3*b*(sign(F) - 1) + pi*a*(sign(F) - 1))*
i)/(2*pi*b^2*i*ln(abs(F))*sign(F) - 2*pi*b^2*i*ln(abs(F)) + pi^2*
b^2*sign(F) - pi^2*b^2 + 2*b^2*ln(abs(F))^2) + (2*(d*x + c)^3*b*i
*ln(abs(F)) + pi*(d*x + c)^3*b*sign(F) - pi*(d*x + c)^3*b - 2*i)*
e^(-1/2*(pi*(d*x + c)^3*b*(sign(F) - 1) + pi*a*(sign(F) - 1))*i)/
(2*pi*b^2*i*ln(abs(F))*sign(F) - 2*pi*b^2*i*ln(abs(F)) - pi^2*b^2
*sign(F) + pi^2*b^2 - 2*b^2*ln(abs(F))^2))*e^((d*x + c)^3*b*ln(ab
s(F)) + a*ln(abs(F)))/i)/d
```

3.286 $\int F^{a+b(c+dx)^3}(c+dx)^2\,dx$

Optimal. Leaf size=27

$$\frac{F^{a+b(c+dx)^3}}{3bd\log(F)}$$

```
[Out] F^(a + b*(c + d*x)^3)/(3*b*d*Log[F])
```

Rubi [A] time = 0.10214, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^{a+b(c+dx)^3}}{3bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^2,x]

[Out] F^(a + b*(c + d*x)^3)/(3*b*d*Log[F])
```

Rubi in Sympy [A] time = 5.4954, size = 19, normalized size = 0.7

$$\frac{F^{a+b(c+dx)^3}}{3bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**2,x)

[Out] F**(a + b*(c + d*x)**3)/(3*b*d*log(F))
```

Mathematica [A] time = 0.0126284, size = 27, normalized size = 1.

$$\frac{F^{a+b(c+dx)^3}}{3bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^2,x]

[Out] F^(a + b*(c + d*x)^3)/(3*b*d*Log[F])
```

Maple [A] time = 0.006, size = 48, normalized size = 1.8

$$\frac{F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{3\,bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^2,x)
```

```
[Out] 1/3*F^(b*d^3*x^3+3*b*c*d^2*x^2+3*b*c^2*d*x+b*c^3+a)/b/d/ln(F)
```

Maxima [A] time = 0.88564, size = 34, normalized size = 1.26

$$\frac{F^{(dx+c)^3b+a}}{3\,bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^2*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*F^((d*x + c)^3*b + a)/(b*d*log(F))
```

Fricas [A] time = 0.286635, size = 63, normalized size = 2.33

$$\frac{F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{3\,bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^2*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/3*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a)/(b*d*
log(F))
```

Sympy [A] time = 0.391872, size = 46, normalized size = 1.7

$$\begin{cases} \frac{F^{a+b(c+dx)^3}}{3bd\log(F)} & \text{for}\ 3bd\log(F)\neq 0 \\ c^2x+cdx^2+\frac{d^2x^3}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**2,x)
```

```
[Out] Piecewise((F**(a + b*(c + d*x)**3)/(3*b*d*log(F)), Ne(3*b*d*log(F
), 0)), (c**2*x + c*d*x**2 + d**2*x**3/3, True))
```

GIAC/XCAS [A] time = 0.243604, size = 34, normalized size = 1.26

$$\frac{F^{(dx+c)^3b+a}}{3\,bd\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^2*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] 1/3*F^((d*x + c)^3*b + a)/(b*d*ln(F))
```

3.287 $\int \frac{F^{a+b(c+dx)^3}}{c+dx}\,dx$

Optimal. Leaf size=22

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{3d}$$

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^3*Log[F]])/(3*d)
```

Rubi [A] time = 0.103376, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^3)/(c + d*x),x]
```

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^3*Log[F]])/(3*d)
```

Rubi in Sympy [A] time = 4.89432, size = 19, normalized size = 0.86

$$\frac{F^a\,\text{Ei}\left(b\,(c+dx)^3\log\,(F)\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c),x)
```

```
[Out] F**a*Ei(b*(c + d*x)**3*log(F))/(3*d)
```

Mathematica [A] time = 0.0109393, size = 22, normalized size = 1.

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(a + b*(c + d*x)^3)/(c + d*x),x]
```

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^3*Log[F]])/(3*d)
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(F^(a+b*(d*x+c)^3)/(d*x+c),x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c),x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c), x)
```

Fricas [A] time = 0.277759, size = 59, normalized size = 2.68

$$\frac{F^a\text{Ei}\left(\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\log\left(F\right)\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/3*F^a*Ei((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(
F))/d
```

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

$$\int \frac{F^{a+b(c+dx)^3}}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**3)/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c), x)
```

3.288 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^4} dx$

Optimal. Leaf size=53

$$\frac{bF^a \log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{3d} - \frac{F^{a+b(c+dx)^3}}{3d(c+dx)^3}$$

```
[Out] -F^(a + b*(c + d*x)^3)/(3*d*(c + d*x)^3) + (b*F^a*ExpIntegralEi[b
*(c + d*x)^3*Log[F]]*Log[F])/(3*d)
```

Rubi [A] time = 0.202287, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{bF^a \log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{3d} - \frac{F^{a+b(c+dx)^3}}{3d(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^3)/(c + d*x)^4,x]
```

```
[Out] -F^(a + b*(c + d*x)^3)/(3*d*(c + d*x)^3) + (b*F^a*ExpIntegralEi[b
*(c + d*x)^3*Log[F]]*Log[F])/(3*d)
```

Rubi in Sympy [A] time = 9.22558, size = 46, normalized size = 0.87

$$\frac{F^a b \log(F) \operatorname{Ei}\left(b(c+dx)^3 \log(F)\right)}{3d} - \frac{F^{a+b(c+dx)^3}}{3d(c+dx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**4,x)
```

```
[Out] F**a*b*log(F)*Ei(b*(c + d*x)**3*log(F))/(3*d) - F**(a + b*(c + d*
x)**3)/(3*d*(c + d*x)**3)
```

Mathematica [A] time = 0.0494521, size = 47, normalized size = 0.89

$$\frac{F^a\left(b\log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right) - \frac{F^{b(c+dx)^3}}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^4,x]
```

```
[Out] (F^a*(-(F^(b*(c + d*x)^3)/(c + d*x)^3) + b*ExpIntegralEi[b*(c + d
*x)^3*Log[F]]*Log[F]))/(3*d)
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^4,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^4,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^4, x)
```

Fricas [A] time = 0.259746, size = 198, normalized size = 3.74

$$\frac{\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)F^a\mathrm{Ei}\left(\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\log\left(F\right)\right)\log\left(F\right) - F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{3\left(d^4x^3 + 3\,cd^3x^2 + 3\,c^2d^2x + c^3d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^4,x, algorithm="fricas")
```

```
[Out] 1/3*((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*F^a*Ei((b*
d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*log(F) - F
^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/(d^4*x^3
+ 3*c*d^3*x^2 + 3*c^2*d^2*x + c^3*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^4,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^4, x)
```

3.289 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^7}\,dx$

Optimal. Leaf size=87

$$\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{6d}-\frac{F^{a+b(c+dx)^3}}{6d(c+dx)^6}-\frac{b\log(F)F^{a+b(c+dx)^3}}{6d(c+dx)^3}$$

```
[Out] -F^(a + b*(c + d*x)^3)/(6*d*(c + d*x)^6) - (b*F^(a + b*(c + d*x)^
3)*Log[F])/(6*d*(c + d*x)^3) + (b^2*F^a*ExpIntegralEi[b*(c + d*x)
^3*Log[F]]*Log[F]^2)/(6*d)
```

Rubi [A] time = 0.304831, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{6d}-\frac{F^{a+b(c+dx)^3}}{6d(c+dx)^6}-\frac{b\log(F)F^{a+b(c+dx)^3}}{6d(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)/(c + d*x)^7,x]
```

```
[Out] -F^(a + b*(c + d*x)^3)/(6*d*(c + d*x)^6) - (b*F^(a + b*(c + d*x)^
3)*Log[F])/(6*d*(c + d*x)^3) + (b^2*F^a*ExpIntegralEi[b*(c + d*x)
^3*Log[F]]*Log[F]^2)/(6*d)
```

Rubi in Sympy [A] time = 14.9209, size = 76, normalized size = 0.87

$$\frac{F^ab^2\log(F)^2\,\text{Ei}\left(b(c+dx)^3\log(F)\right)}{6d}-\frac{F^{a+b(c+dx)^3}b\log(F)}{6d(c+dx)^3}-\frac{F^{a+b(c+dx)^3}}{6d(c+dx)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**7,x)
```

```
[Out] F**a*b**2*log(F)**2*Ei(b*(c + d*x)**3*log(F))/(6*d) - F**(a + b*(
c + d*x)**3)*b*log(F)/(6*d*(c + d*x)**3) - F**(a + b*(c + d*x)**3
)/(6*d*(c + d*x)**6)
```

Mathematica [A] time = 0.0743183, size = 64, normalized size = 0.74

$$\frac{F^a\left(b^2\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)-\frac{F^{b(c+dx)^3}\left(b\log(F)(c+dx)^3+1\right)}{(c+dx)^6}\right)}{6d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^7,x]
```

```
[Out] (F^a*(b^2*ExpIntegralEi[b*(c + d*x)^3*Log[F]]*Log[F]^2 - (F^(b*(c
 + d*x)^3)*(1 + b*(c + d*x)^3*Log[F]))/(c + d*x)^6))/(6*d)
```

Maple [F] time = 0.095, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^7,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^7,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^7, x)
```

Fricas [A] time = 0.305853, size = 363, normalized size = 4.17

$$\frac{\left(b^2d^6x^6 + 6\,b^2cd^5x^5 + 15\,b^2c^2d^4x^4 + 20\,b^2c^3d^3x^3 + 15\,b^2c^4d^2x^2 + 6\,b^2c^5dx + b^2c^6\right)F^a\text{Ei}\left(\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\right.}{6\left(d^7x^6 + 6\,cd^6x^5 + 15\,c^2d^5x^4 + 20\,c^3d^4x^3 + 15\,c^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/6*((b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2
*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*F^a*
Ei((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*log(
F)^2 - ((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F)
+ 1)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/(d^
7*x^6 + 6*c*d^6*x^5 + 15*c^2*d^5*x^4 + 20*c^3*d^4*x^3 + 15*c^4*d^
3*x^2 + 6*c^5*d^2*x + c^6*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**7,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^7,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^7, x)
```

3.290 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^{10}} \, dx$

Optimal. Leaf size=121

$$\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{18d}-\frac{b^2\log^2(F)F^{a+b(c+dx)^3}}{18d(c+dx)^3}-\frac{F^{a+b(c+dx)^3}}{9d(c+dx)^9}-\frac{b\log(F)F^{a+b(c+dx)^3}}{18d(c+dx)^6}$$

```
[Out] -F^(a + b*(c + d*x)^3)/(9*d*(c + d*x)^9) - (b*F^(a + b*(c + d*x)^
3)*Log[F])/(18*d*(c + d*x)^6) - (b^2*F^(a + b*(c + d*x)^3)*Log[F]
^2)/(18*d*(c + d*x)^3) + (b^3*F^a*ExpIntegralEi[b*(c + d*x)^3*Log
[F]]*Log[F]^3)/(18*d)
```

Rubi [A] time = 0.410726, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)}{18d}-\frac{b^2\log^2(F)F^{a+b(c+dx)^3}}{18d(c+dx)^3}-\frac{F^{a+b(c+dx)^3}}{9d(c+dx)^9}-\frac{b\log(F)F^{a+b(c+dx)^3}}{18d(c+dx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)/(c + d*x)^10,x]
```

```
[Out] -F^(a + b*(c + d*x)^3)/(9*d*(c + d*x)^9) - (b*F^(a + b*(c + d*x)^
3)*Log[F])/(18*d*(c + d*x)^6) - (b^2*F^(a + b*(c + d*x)^3)*Log[F]
^2)/(18*d*(c + d*x)^3) + (b^3*F^a*ExpIntegralEi[b*(c + d*x)^3*Log
[F]]*Log[F]^3)/(18*d)
```

Rubi in Sympy [A] time = 21.9805, size = 107, normalized size = 0.88

$$\frac{F^ab^3\log(F)^3\operatorname{Ei}\left(b(c+dx)^3\log(F)\right)}{18d}-\frac{F^{a+b(c+dx)^3}b^2\log(F)^2}{18d(c+dx)^3}-\frac{F^{a+b(c+dx)^3}b\log(F)}{18d(c+dx)^6}-\frac{F^{a+b(c+dx)^3}}{9d(c+dx)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**10,x)
```

```
[Out] F**a*b**3*log(F)**3*Ei(b*(c + d*x)**3*log(F))/(18*d) - F**(a + b*
(c + d*x)**3)*b**2*log(F)**2/(18*d*(c + d*x)**3) - F**(a + b*(c +
 d*x)**3)*b*log(F)/(18*d*(c + d*x)**6) - F**(a + b*(c + d*x)**3)/
(9*d*(c + d*x)**9)
```

Mathematica [A] time = 0.099723, size = 79, normalized size = 0.65

$$\frac{F^a\left(b^3\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)-\frac{F^{b(c+dx)^3}\left(b^2\log^2(F)(c+dx)^6+b\log(F)(c+dx)^3+2\right)}{(c+dx)^9}\right)}{18d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^10,x]
```

```
[Out] (F^a*(b^3*ExpIntegralEi[b*(c + d*x)^3*Log[F]]*Log[F]^3 - (F^(b*(c
 + d*x)^3)*(2 + b*(c + d*x)^3*Log[F] + b^2*(c + d*x)^6*Log[F]^2))
```

```
/(c + d*x)^9))/(18*d)
```

Maple [F] time = 0.13, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^10,x)

[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^10,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^10,x, algorithm="maxima")

[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^10, x)
```

Fricas [A] time = 0.260376, size = 582, normalized size = 4.81

$$\frac{\left(b^3d^9x^9 + 9\,b^3cd^8x^8 + 36\,b^3c^2d^7x^7 + 84\,b^3c^3d^6x^6 + 126\,b^3c^4d^5x^5 + 126\,b^3c^5d^4x^4 + 84\,b^3c^6d^3x^3 + 36\,b^3c^7d^2x^2 + 9\,b^3c^8dx + b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^10,x, algorithm="fricas")

[Out] 1/18*((b^3*d^9*x^9 + 9*b^3*c*d^8*x^8 + 36*b^3*c^2*d^7*x^7 + 84*b^
3*c^3*d^6*x^6 + 126*b^3*c^4*d^5*x^5 + 126*b^3*c^5*d^4*x^4 + 84*b^
3*c^6*d^3*x^3 + 36*b^3*c^7*d^2*x^2 + 9*b^3*c^8*d*x + b^3*c^9)*F^a
*Ei((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*log
(F)^3 - ((b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20
*b^2*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*
log(F)^2 + (b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(
F) + 2)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/
(d^10*x^9 + 9*c*d^9*x^8 + 36*c^2*d^8*x^7 + 84*c^3*d^7*x^6 + 126*c
^4*d^6*x^5 + 126*c^5*d^5*x^4 + 84*c^6*d^4*x^3 + 36*c^7*d^3*x^2 +
9*c^8*d^2*x + c^9*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^10,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^10, x)
```

3.291 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^{13}}\,dx$

Optimal. Leaf size=31

$$-\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-b\log(F)(c+dx)^3\right)}{3d}$$

```
[Out] -(b^4*F^a*Gamma[-4, -(b*(c + d*x)^3*Log[F])]*Log[F]^4)/(3*d)
```

Rubi [A] time = 0.0983295, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-b\log(F)(c+dx)^3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)/(c + d*x)^13,x]
```

```
[Out] -(b^4*F^a*Gamma[-4, -(b*(c + d*x)^3*Log[F])]*Log[F]^4)/(3*d)
```

Rubi in Sympy [A] time = 5.93066, size = 32, normalized size = 1.03

$$-\frac{F^ab^4\left(-4,-b\left(c+dx\right)^3\log\left(F\right)\right)\log\left(F\right)^4}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**13,x)
```

```
[Out] -F**a*b**4*Gamma(-4, -b*(c + d*x)**3*log(F))*log(F)**4/(3*d)
```

Mathematica [B] time = 0.108261, size = 95, normalized size = 3.06

$$\frac{F^a\left(b^4\log^4(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)-\frac{F^{b(c+dx)^3}\left(b^3\log^3(F)(c+dx)^9+b^2\log^2(F)(c+dx)^6+2b\log(F)(c+dx)^3+6\right)}{(c+dx)^{12}}\right)}{72d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^13,x]
```

```
[Out] (F^a*(b^4*ExpIntegralEi[b*(c + d*x)^3*Log[F]]*Log[F]^4 - (F^(b*(c
 + d*x)^3)*(6 + 2*b*(c + d*x)^3*Log[F] + b^2*(c + d*x)^6*Log[F]^2
 + b^3*(c + d*x)^9*Log[F]^3))/(c + d*x)^12))/(72*d)
```

Maple [F] time = 0.188, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^13,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^13,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^13,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^13, x)
```

Fricas [A] time = 0.291637, size = 859, normalized size = 27.71

$$\frac{\left(b^4d^{12}x^{12} + 12\,b^4cd^{11}x^{11} + 66\,b^4c^2d^{10}x^{10} + 220\,b^4c^3d^9x^9 + 495\,b^4c^4d^8x^8 + 792\,b^4c^5d^7x^7 + 924\,b^4c^6d^6x^6 + 792\,b^4c^7d^5x^5 + 49}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^13,x, algorithm="fricas")
```

```
[Out] 1/72*((b^4*d^12*x^12 + 12*b^4*c*d^11*x^11 + 66*b^4*c^2*d^10*x^10
+ 220*b^4*c^3*d^9*x^9 + 495*b^4*c^4*d^8*x^8 + 792*b^4*c^5*d^7*x^7
 + 924*b^4*c^6*d^6*x^6 + 792*b^4*c^7*d^5*x^5 + 495*b^4*c^8*d^4*x^
4 + 220*b^4*c^9*d^3*x^3 + 66*b^4*c^10*d^2*x^2 + 12*b^4*c^11*d*x +
 b^4*c^12)*F^a*Ei((b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^
3)*log(F))*log(F)^4 - ((b^3*d^9*x^9 + 9*b^3*c*d^8*x^8 + 36*b^3*c^
2*d^7*x^7 + 84*b^3*c^3*d^6*x^6 + 126*b^3*c^4*d^5*x^5 + 126*b^3*c^
5*d^4*x^4 + 84*b^3*c^6*d^3*x^3 + 36*b^3*c^7*d^2*x^2 + 9*b^3*c^8*d
*x + b^3*c^9)*log(F)^3 + (b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*
c^2*d^4*x^4 + 20*b^2*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5
*d*x + b^2*c^6)*log(F)^2 + 2*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2
*d*x + b*c^3)*log(F) + 6)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*
d*x + b*c^3 + a))/(d^13*x^12 + 12*c*d^12*x^11 + 66*c^2*d^11*x^10
+ 220*c^3*d^10*x^9 + 495*c^4*d^9*x^8 + 792*c^5*d^8*x^7 + 924*c^6*
d^7*x^6 + 792*c^7*d^6*x^5 + 495*c^8*d^5*x^4 + 220*c^9*d^4*x^3 + 6
6*c^10*d^3*x^2 + 12*c^11*d^2*x + c^12*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**13,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^13,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^13, x)
```

3.292 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^{16}}\,dx$

Optimal. Leaf size=31

$$\frac{b^5F^a\log^5(F)\mathrm{Gamma}\left(-5,-b\log(F)(c+dx)^3\right)}{3d}$$

```
[Out] (b^5*F^a*Gamma[-5, -(b*(c + d*x)^3*Log[F])]*Log[F]^5)/(3*d)
```

Rubi [A] time = 0.0987708, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$\frac{b^5F^a\log^5(F)\mathrm{Gamma}\left(-5,-b\log(F)(c+dx)^3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)/(c + d*x)^16,x]
```

```
[Out] (b^5*F^a*Gamma[-5, -(b*(c + d*x)^3*Log[F])]*Log[F]^5)/(3*d)
```

Rubi in Sympy [A] time = 6.03549, size = 31, normalized size = 1.

$$\frac{F^ab^5\left(-5,-b\,(c+dx)^3\log(F)\right)\log(F)^5}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**16,x)
```

```
[Out] F**a*b**5*Gamma(-5, -b*(c + d*x)**3*log(F))*log(F)**5/(3*d)
```

Mathematica [B] time = 0.13009, size = 111, normalized size = 3.58

$$\frac{F^a\left(b^5\log^5(F)\mathrm{ExpIntegralEi}\left(b\log(F)(c+dx)^3\right)-\frac{F^{b(c+dx)^3}\left(b^4\log^4(F)(c+dx)^{12}+b^3\log^3(F)(c+dx)^9+2b^2\log^2(F)(c+dx)^6+6b\log(F)(c+dx)^3+24\right)}{(c+dx)^{15}}\right)}{360d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^16,x]
```

```
[Out] (F^a*(b^5*ExpIntegralEi[b*(c + d*x)^3*Log[F]]*Log[F]^5 - (F^(b*(c
 + d*x)^3)*(24 + 6*b*(c + d*x)^3*Log[F] + 2*b^2*(c + d*x)^6*Log[F
]^2 + b^3*(c + d*x)^9*Log[F]^3 + b^4*(c + d*x)^12*Log[F]^4))/(c +
 d*x)^15))/(360*d)
```

Maple [F] time = 0.287, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^{16}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^16,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^16,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^{16}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^16,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^16, x)
```

Fricas [A] time = 0.283486, size = 1192, normalized size = 38.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^16,x, algorithm="fricas")
```

```
[Out] 1/360*((b^5*d^15*x^15 + 15*b^5*c*d^14*x^14 + 105*b^5*c^2*d^13*x^1
3 + 455*b^5*c^3*d^12*x^12 + 1365*b^5*c^4*d^11*x^11 + 3003*b^5*c^5
*d^10*x^10 + 5005*b^5*c^6*d^9*x^9 + 6435*b^5*c^7*d^8*x^8 + 6435*b
^5*c^8*d^7*x^7 + 5005*b^5*c^9*d^6*x^6 + 3003*b^5*c^10*d^5*x^5 + 1
365*b^5*c^11*d^4*x^4 + 455*b^5*c^12*d^3*x^3 + 105*b^5*c^13*d^2*x^
2 + 15*b^5*c^14*d*x + b^5*c^15)*F^a*Ei((b*d^3*x^3 + 3*b*c*d^2*x^2
 + 3*b*c^2*d*x + b*c^3)*log(F))*log(F)^5 - ((b^4*d^12*x^12 + 12*b
^4*c*d^11*x^11 + 66*b^4*c^2*d^10*x^10 + 220*b^4*c^3*d^9*x^9 + 495
*b^4*c^4*d^8*x^8 + 792*b^4*c^5*d^7*x^7 + 924*b^4*c^6*d^6*x^6 + 79
2*b^4*c^7*d^5*x^5 + 495*b^4*c^8*d^4*x^4 + 220*b^4*c^9*d^3*x^3 + 6
6*b^4*c^10*d^2*x^2 + 12*b^4*c^11*d*x + b^4*c^12)*log(F)^4 + (b^3*
d^9*x^9 + 9*b^3*c*d^8*x^8 + 36*b^3*c^2*d^7*x^7 + 84*b^3*c^3*d^6*x
^6 + 126*b^3*c^4*d^5*x^5 + 126*b^3*c^5*d^4*x^4 + 84*b^3*c^6*d^3*x
^3 + 36*b^3*c^7*d^2*x^2 + 9*b^3*c^8*d*x + b^3*c^9)*log(F)^3 + 2*(
b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2*c^3*d
^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*log(F)^2 +
 6*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F) + 24)
*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/(d^16*x
^15 + 15*c*d^15*x^14 + 105*c^2*d^14*x^13 + 455*c^3*d^13*x^12 + 13
65*c^4*d^12*x^11 + 3003*c^5*d^11*x^10 + 5005*c^6*d^10*x^9 + 6435*
c^7*d^9*x^8 + 6435*c^8*d^8*x^7 + 5005*c^9*d^7*x^6 + 3003*c^10*d^6
*x^5 + 1365*c^11*d^5*x^4 + 455*c^12*d^4*x^3 + 105*c^13*d^3*x^2 +
15*c^14*d^2*x + c^15*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**16,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^{16}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^16,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^16, x)
```

3.293 $\int F^{a+b(c+dx)^3}(c+dx)^3\,dx$

Optimal. Leaf size=49

$$-\frac{F^a(c+dx)^4\text{Gamma}\left(\frac{4}{3},-b\log(F)(c+dx)^3\right)}{3d\left(-b\log(F)(c+dx)^3\right)^{4/3}}$$

```
[Out] -(F^a*(c + d*x)^4*Gamma[4/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*
(c + d*x)^3*Log[F]))^(4/3))
```

Rubi [A] time = 0.105393, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a(c+dx)^4\text{Gamma}\left(\frac{4}{3},-b\log(F)(c+dx)^3\right)}{3d\left(-b\log(F)(c+dx)^3\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x)^3,x]
```

```
[Out] -(F^a*(c + d*x)^4*Gamma[4/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*
(c + d*x)^3*Log[F]))^(4/3))
```

Rubi in Sympy [A] time = 5.49816, size = 48, normalized size = 0.98

$$-\frac{F^a\left(c+dx\right)^4\left(\frac{4}{3},-b\left(c+dx\right)^3\log\left(F\right)\right)}{3d\left(-b\left(c+dx\right)^3\log\left(F\right)\right)^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**3,x)
```

```
[Out] -F**a*(c + d*x)**4*Gamma(4/3, -b*(c + d*x)**3*log(F))/(3*d*(-b*(c
 + d*x)**3*log(F))**(4/3))
```

Mathematica [A] time = 0.107883, size = 79, normalized size = 1.61

$$-\frac{F^a(c+dx)^4\left(\text{Gamma}\left(\frac{1}{3},-b\log(F)(c+dx)^3\right)+3F^{b(c+dx)^3}\sqrt[3]{-b\log(F)(c+dx)^3}\right)}{9d\left(-b\log(F)(c+dx)^3\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x)^3,x]
```

```
[Out] -(F^a*(c + d*x)^4*(Gamma[1/3, -(b*(c + d*x)^3*Log[F])] + 3*F^(b*(
c + d*x)^3)*(-(b*(c + d*x)^3*Log[F]))^(1/3)))/(9*d*(-(b*(c + d*x)
^3*Log[F]))^(4/3))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^3}\left(dx+c\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c)^3,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)*(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{(dx+c)^3b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^3*F^((d*x + c)^3*b + a), x)
```

Fricas [A] time = 0.296052, size = 159, normalized size = 3.24

$$\frac{F^a d\,\Gamma\left(\frac{1}{3}, -\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\log\left(F\right)\right) + 3\,\left(-bd^3\log\left(F\right)\right)^{\frac{1}{3}}(dx+c)F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{9\,\left(-bd^3\log\left(F\right)\right)^{\frac{1}{3}}bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] 1/9*(F^a*d*gamma(1/3, -(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x +
 b*c^3)*log(F)) + 3*(-b*d^3*log(F))^(1/3)*(d*x + c)*F^(b*d^3*x^3
+ 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/((-b*d^3*log(F))^(1/3
)*b*d*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{(dx+c)^3b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3*F^((d*x + c)^3*b + a), x)
```

3.294 $\int F^{a+b(c+dx)^3}(c+dx)\,dx$

Optimal. Leaf size=49

$$-\frac{F^a(c+dx)^2\text{Gamma}\left(\frac{2}{3},-b\log(F)(c+dx)^3\right)}{3d\left(-b\log(F)(c+dx)^3\right)^{2/3}}$$

```
[Out] -(F^a*(c + d*x)^2*Gamma[2/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*
(c + d*x)^3*Log[F]))^(2/3))
```

Rubi [A] time = 0.061136, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{F^a(c+dx)^2\text{Gamma}\left(\frac{2}{3},-b\log(F)(c+dx)^3\right)}{3d\left(-b\log(F)(c+dx)^3\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)*(c + d*x),x]
```

```
[Out] -(F^a*(c + d*x)^2*Gamma[2/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*
(c + d*x)^3*Log[F]))^(2/3))
```

Rubi in Sympy [A] time = 3.87782, size = 48, normalized size = 0.98

$$-\frac{F^a\left(c+dx\right)^2\left(\frac{2}{3},-b\left(c+dx\right)^3\log\left(F\right)\right)}{3d\left(-b\left(c+dx\right)^3\log\left(F\right)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)*(d*x+c),x)
```

```
[Out] -F**a*(c + d*x)**2*Gamma(2/3, -b*(c + d*x)**3*log(F))/(3*d*(-b*(c
 + d*x)**3*log(F))**(2/3))
```

Mathematica [A] time = 0.037629, size = 49, normalized size = 1.

$$-\frac{F^a(c+dx)^2\text{Gamma}\left(\frac{2}{3},-b\log(F)(c+dx)^3\right)}{3d\left(-b\log(F)(c+dx)^3\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)*(c + d*x),x]
```

```
[Out] -(F^a*(c + d*x)^2*Gamma[2/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*
(c + d*x)^3*Log[F]))^(2/3))
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^3}\left(dx+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)*(d*x+c),x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)*(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)F^{(dx+c)^3b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)*F^((d*x + c)^3*b + a), x)
```

Fricas [A] time = 0.306354, size = 73, normalized size = 1.49

$$-\frac{F^a d\,\Gamma\left(\frac{2}{3}, -\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\log\left(F\right)\right)}{3\,\left(-bd^3\log\left(F\right)\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] -1/3*F^a*d*gamma(2/3, -(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x +
 b*c^3)*log(F))/(-b*d^3*log(F))^(2/3)
```

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

$$\int F^{a+b(c+dx)^3}\,(c + dx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)*(d*x+c),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**3)*(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)F^{(dx+c)^3b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)*F^((d*x + c)^3*b + a), x)
```

3.295 $\int F^{a+b(c+dx)^3}\,dx$

Optimal. Leaf size=47

$$-\frac{F^a(c+dx)\text{Gamma}\left(\frac{1}{3},-b\log(F)(c+dx)^3\right)}{3d\sqrt[3]{-b\log(F)(c+dx)^3}}$$

```
[Out] -(F^a*(c + d*x)*Gamma[1/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*(c
 + d*x)^3*Log[F]))^(1/3))
```

Rubi [A] time = 0.0186966, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{F^a(c+dx)\text{Gamma}\left(\frac{1}{3},-b\log(F)(c+dx)^3\right)}{3d\sqrt[3]{-b\log(F)(c+dx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3),x]
```

```
[Out] -(F^a*(c + d*x)*Gamma[1/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*(c
 + d*x)^3*Log[F]))^(1/3))
```

Rubi in Sympy [A] time = 1.79286, size = 46, normalized size = 0.98

$$-\frac{F^a\,(c+dx)\left(\frac{1}{3},-b\,(c+dx)^3\log(F)\right)}{3d\sqrt[3]{-b\,(c+dx)^3\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3),x)
```

```
[Out] -F**a*(c + d*x)*Gamma(1/3, -b*(c + d*x)**3*log(F))/(3*d*(-b*(c +
d*x)**3*log(F))**(1/3))
```

Mathematica [A] time = 0.0220555, size = 47, normalized size = 1.

$$-\frac{F^a(c+dx)\text{Gamma}\left(\frac{1}{3},-b\log(F)(c+dx)^3\right)}{3d\sqrt[3]{-b\log(F)(c+dx)^3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3),x]
```

```
[Out] -(F^a*(c + d*x)*Gamma[1/3, -(b*(c + d*x)^3*Log[F])])/(3*d*(-(b*(c
 + d*x)^3*Log[F]))^(1/3))
```

Maple [F] time = 0.018, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3),x)
```

```
[Out] int(F^(a+b*(d*x+c)^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(dx+c)^3 b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a),x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a), x)
```

Fricas [A] time = 0.259748, size = 72, normalized size = 1.53

$$-\frac{F^{a}\,\Gamma\left(\frac{1}{3}, -\left(bd^{3}x^{3} + 3\,bcd^{2}x^{2} + 3\,bc^{2}dx + bc^{3}\right)\log\left(F\right)\right)}{3\,\left(-bd^{3}\log\left(F\right)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a),x, algorithm="fricas")
```

```
[Out] -1/3*F^a*gamma(1/3, -(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b
*c^3)*log(F))/(-b*d^3*log(F))^(1/3)
```

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

$$\int F^{a+b(c+dx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(dx+c)^3 b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a),x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a), x)
```

3.296 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^2}\,dx$

Optimal. Leaf size=49

$$-\frac{F^a\sqrt[3]{-b\log(F)(c+dx)^3}\,\text{Gamma}\left(-\frac{1}{3},-b\log(F)(c+dx)^3\right)}{3d(c+dx)}$$

```
[Out] -(F^a*Gamma[-1/3, -(b*(c + d*x)^3*Log[F])]*(-(b*(c + d*x)^3*Log[F
]))^(1/3))/(3*d*(c + d*x))
```

Rubi [A] time = 0.100656, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\sqrt[3]{-b\log(F)(c+dx)^3}\,\text{Gamma}\left(-\frac{1}{3},-b\log(F)(c+dx)^3\right)}{3d(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^3)/(c + d*x)^2,x]
```

```
[Out] -(F^a*Gamma[-1/3, -(b*(c + d*x)^3*Log[F])]*(-(b*(c + d*x)^3*Log[F
]))^(1/3))/(3*d*(c + d*x))
```

Rubi in Sympy [A] time = 5.27514, size = 48, normalized size = 0.98

$$-\frac{F^a\sqrt[3]{-b\left(c+dx\right)^3\log\left(F\right)}\left(-\frac{1}{3},-b\left(c+dx\right)^3\log\left(F\right)\right)}{3d\left(c+dx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**2,x)
```

```
[Out] -F**a*(-b*(c + d*x)**3*log(F))**(1/3)*Gamma(-1/3, -b*(c + d*x)**3
*log(F))/(3*d*(c + d*x))
```

Mathematica [A] time = 0.100247, size = 61, normalized size = 1.24

$$\frac{F^a\left(\sqrt[3]{-b\log(F)(c+dx)^3}\,\text{Gamma}\left(\frac{2}{3},-b\log(F)(c+dx)^3\right)-F^{b(c+dx)^3}\right)}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^2,x]
```

```
[Out] (F^a*(-F^(b*(c + d*x)^3) + Gamma[2/3, -(b*(c + d*x)^3*Log[F])]*(-
(b*(c + d*x)^3*Log[F]))^(1/3)))/(d*(c + d*x))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b*(d*x+c)^3)/(d*x+c)^2,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((d*x + c)^3*b + a)/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^2, x)
```

Fricas [A] time = 0.267181, size = 171, normalized size = 3.49

$$-\frac{\left(bd^3x + bcd^2\right)F^a\,\Gamma\left(\frac{2}{3}, -\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\log\left(F\right)\right)\log\left(F\right) + \left(-bd^3\log\left(F\right)\right)^{\frac{2}{3}}F^{bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3+a}}{\left(-bd^3\log\left(F\right)\right)^{\frac{2}{3}}\left(d^2x + cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((d*x + c)^3*b + a)/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] -((b*d^3*x + b*c*d^2)*F^a*gamma(2/3, -(b*d^3*x^3 + 3*b*c*d^2*x^2
+ 3*b*c^2*d*x + b*c^3)*log(F))*log(F) + (-b*d^3*log(F))^(2/3)*F^(
b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/((-b*d^3*lo
g(F))^(2/3)*(d^2*x + c*d))
```

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

$$\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**2,x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**3)/(c + d*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((d*x + c)^3*b + a)/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^2, x)
```

3.297 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^3} dx$

Optimal. Leaf size=49

$$-\frac{F^a \left(-b \log(F)(c+dx)^3\right)^{2/3} \text{Gamma}\left(-\frac{2}{3}, -b \log(F)(c+dx)^3\right)}{3d(c+dx)^2}$$

```
[Out] -(F^a*Gamma[-2/3, -(b*(c + d*x)^3*Log[F])]*(-(b*(c + d*x)^3*Log[F
]))^(2/3))/(3*d*(c + d*x)^2)
```

Rubi [A] time = 0.0999681, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a \left(-b \log(F)(c+dx)^3\right)^{2/3} \text{Gamma}\left(-\frac{2}{3}, -b \log(F)(c+dx)^3\right)}{3d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)/(c + d*x)^3,x]
```

```
[Out] -(F^a*Gamma[-2/3, -(b*(c + d*x)^3*Log[F])]*(-(b*(c + d*x)^3*Log[F
]))^(2/3))/(3*d*(c + d*x)^2)
```

Rubi in Sympy [A] time = 5.29846, size = 49, normalized size = 1.

$$-\frac{F^a \left(-b\left(c+dx\right)^3 \log\left(F\right)\right)^{\frac{2}{3}} \left(-\frac{2}{3}, -b\left(c+dx\right)^3 \log\left(F\right)\right)}{3d\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**3,x)
```

```
[Out] -F**a*(-b*(c + d*x)**3*log(F))**(2/3)*Gamma(-2/3, -b*(c + d*x)**3
*log(F))/(3*d*(c + d*x)**2)
```

Mathematica [A] time = 0.113851, size = 63, normalized size = 1.29

$$-\frac{F^a \left(F^{b(c+dx)^3} - \left(-b \log(F)(c+dx)^3\right)^{2/3} \text{Gamma}\left(\frac{1}{3}, -b \log(F)(c+dx)^3\right)\right)}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^3,x]
```

```
[Out] -(F^a*(F^(b*(c + d*x)^3) - Gamma[1/3, -(b*(c + d*x)^3*Log[F])]*(-
(b*(c + d*x)^3*Log[F]))^(2/3)))/(2*d*(c + d*x)^2)
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^3,x)
```

```
[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^3, x)
```

Fricas [A] time = 0.250853, size = 200, normalized size = 4.08

$$-\frac{\left(bd^3x^2 + 2\,bcd^2x + bc^2d\right)F^a\left(\frac{1}{3}, -\left(bd^3x^3 + 3\,bcd^2x^2 + 3\,bc^2dx + bc^3\right)\log\left(F\right)\right)\log\left(F\right) + \left(-bd^3\log\left(F\right)\right)^{\frac{1}{3}}F^{bd^3x^3+3\,bcd^2x^2+3\,b}}{2\left(d^3x^2 + 2\,cd^2x + c^2d\right)\left(-bd^3\log\left(F\right)\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] -1/2*((b*d^3*x^2 + 2*b*c*d^2*x + b*c^2*d)*F^a*gamma(1/3, -(b*d^3*
x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*log(F) + (-b*d
^3*log(F))^(1/3)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c
^3 + a))/((d^3*x^2 + 2*c*d^2*x + c^2*d)*(-b*d^3*log(F))^(1/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^3, x)
```

3.298 $\int \frac{F^{a+b(c+dx)^3}}{(c+dx)^5} \, dx$

Optimal. Leaf size=49

$$-\frac{F^a \left(-b \log(F)(c+dx)^3\right)^{4/3} \text{Gamma}\left(-\frac{4}{3}, -b \log(F)(c+dx)^3\right)}{3d(c+dx)^4}$$

```
[Out] -(F^a*Gamma[-4/3, -(b*(c + d*x)^3*Log[F])]*(-(b*(c + d*x)^3*Log[F
]))^(4/3))/(3*d*(c + d*x)^4)
```

Rubi [A] time = 0.0995934, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a \left(-b \log(F)(c+dx)^3\right)^{4/3} \text{Gamma}\left(-\frac{4}{3}, -b \log(F)(c+dx)^3\right)}{3d(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^3)/(c + d*x)^5,x]
```

```
[Out] -(F^a*Gamma[-4/3, -(b*(c + d*x)^3*Log[F])]*(-(b*(c + d*x)^3*Log[F
]))^(4/3))/(3*d*(c + d*x)^4)
```

Rubi in Sympy [A] time = 5.31346, size = 49, normalized size = 1.

$$-\frac{F^a \left(-b\,(c+dx)^3 \log(F)\right)^{\frac{4}{3}} \left(-\frac{4}{3}, -b\,(c+dx)^3 \log(F)\right)}{3d\,(c+dx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**5,x)
```

```
[Out] -F**a*(-b*(c + d*x)**3*log(F))**(4/3)*Gamma(-4/3, -b*(c + d*x)**3
*log(F))/(3*d*(c + d*x)**4)
```

Mathematica [A] time = 0.248423, size = 93, normalized size = 1.9

$$\frac{F^a \left(\frac{3b^3 \log^3(F)(c+dx)^9 \text{Gamma}\left(\frac{2}{3}, -b \log(F)(c+dx)^3\right)}{\left(-b \log(F)(c+dx)^3\right)^{5/3}} - F^{b(c+dx)^3} \left(3b \log(F)(c+dx)^3 + 1\right)\right)}{4d(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^3)/(c + d*x)^5,x]
```

```
[Out] (F^a*((3*b^3*(c + d*x)^9*Gamma[2/3, -(b*(c + d*x)^3*Log[F])]*Log[
F]^3)/(-(b*(c + d*x)^3*Log[F]))^(5/3) - F^(b*(c + d*x)^3)*(1 + 3*
b*(c + d*x)^3*Log[F])))/(4*d*(c + d*x)^4)
```

Maple [F] time = 0.071, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^3}}{(dx+c)^5} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^3)/(d*x+c)^5,x)

[Out] int(F^(a+b*(d*x+c)^3)/(d*x+c)^5,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^5,x, algorithm="maxima")

[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^5, x)
```

Fricas [A] time = 0.278192, size = 333, normalized size = 6.8

$$-\frac{3\left(b^2d^6x^4+4\,b^2cd^5x^3+6\,b^2c^2d^4x^2+4\,b^2c^3d^3x+b^2c^4d^2\right)F^a\left(\frac{2}{3},-\left(bd^3x^3+3\,bcd^2x^2+3\,bc^2dx+bc^3\right)\log\left(F\right)\right)\log\left(F\right)^2+\left(-\right.}{4\left(d^5x^4+4\,cd^4x^3+6\,c^2d^3x^2+4\,c^3d^2x+c^4d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^5,x, algorithm="fricas")

[Out] -1/4*(3*(b^2*d^6*x^4 + 4*b^2*c*d^5*x^3 + 6*b^2*c^2*d^4*x^2 + 4*b^
2*c^3*d^3*x + b^2*c^4*d^2)*F^a*gamma(2/3, -(b*d^3*x^3 + 3*b*c*d^2
*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*log(F)^2 + (-b*d^3*log(F))^(2
/3)*(3*(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F) +
 1)*F^(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3 + a))/((d^
5*x^4 + 4*c*d^4*x^3 + 6*c^2*d^3*x^2 + 4*c^3*d^2*x + c^4*d)*(-b*d^
3*log(F))^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**3)/(d*x+c)**5,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^3b+a}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^3*b + a)/(d*x + c)^5,x, algorithm="giac")

[Out] integrate(F^((d*x + c)^3*b + a)/(d*x + c)^5, x)
```

3.299 $\int f^{a+b\sqrt{c+dx}}\,dx$

Optimal. Leaf size=64

$$\frac{2\sqrt{c+dx}\,f^{a+b\sqrt{c+dx}}}{bd\log(f)}-\frac{2f^{a+b\sqrt{c+dx}}}{b^2d\log^2(f)}$$

```
[Out] (-2*f^(a + b*Sqrt[c + d*x]))/(b^2*d*Log[f]^2) + (2*f^(a + b*Sqrt[
c + d*x])*Sqrt[c + d*x])/(b*d*Log[f])
```

Rubi [A] time = 0.0665565, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sqrt{c+dx}\,f^{a+b\sqrt{c+dx}}}{bd\log(f)}-\frac{2f^{a+b\sqrt{c+dx}}}{b^2d\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*Sqrt[c + d*x]),x]
```

```
[Out] (-2*f^(a + b*Sqrt[c + d*x]))/(b^2*d*Log[f]^2) + (2*f^(a + b*Sqrt[
c + d*x])*Sqrt[c + d*x])/(b*d*Log[f])
```

Rubi in Sympy [A] time = 6.71773, size = 54, normalized size = 0.84

$$\frac{2f^{a+b\sqrt{c+dx}}\sqrt{c+dx}}{bd\log{(f)}}-\frac{2f^{a+b\sqrt{c+dx}}}{b^2d\log{(f)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*(d*x+c)**(1/2)),x)
```

```
[Out] 2*f**(a + b*sqrt(c + d*x))*sqrt(c + d*x)/(b*d*log(f)) - 2*f**(a +
 b*sqrt(c + d*x))/(b**2*d*log(f)**2)
```

Mathematica [A] time = 0.0329998, size = 42, normalized size = 0.66

$$\frac{2f^{a+b\sqrt{c+dx}}\left(b\log(f)\sqrt{c+dx}-1\right)}{b^2d\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*Sqrt[c + d*x]),x]
```

```
[Out] (2*f^(a + b*Sqrt[c + d*x])*(-1 + b*Sqrt[c + d*x]*Log[f]))/(b^2*d*
Log[f]^2)
```

Maple [F] time = 0.006, size = 0, normalized size = 0.

$$\int f^{a+b\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*(d*x+c)^(1/2)),x)
```

```
[Out] int(f^(a+b*(d*x+c)^(1/2)),x)
```

Maxima [A] time = 0.78238, size = 58, normalized size = 0.91

$$\frac{2\left(\sqrt{dx+c}bf^{a}\log\left(f\right)-f^{a}\right)f^{\sqrt{dx+c}b}}{b^{2}d\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(sqrt(d*x + c)*b + a),x, algorithm="maxima")
```

```
[Out] 2*(sqrt(d*x + c)*b*f^a*log(f) - f^a)*f^(sqrt(d*x + c)*b)/(b^2*d*l
og(f)^2)
```

Fricas [A] time = 0.247054, size = 57, normalized size = 0.89

$$\frac{2\left(\sqrt{dx+c}b\log\left(f\right)-1\right)e^{\left(\sqrt{dx+c}b\log\left(f\right)+a\log\left(f\right)\right)}}{b^{2}d\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(sqrt(d*x + c)*b + a),x, algorithm="fricas")
```

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

Sympy [A] time = 1.1994, size = 76, normalized size = 1.19

$$\begin{cases} x & \text{for}\: b = 0 \wedge d = 0 \wedge f = 1 \\ f^{a+b\sqrt{c}}x & \text{for}\: d = 0 \\ f^{a}x & \text{for}\: b = 0 \\ x & \text{for}\: f = 1 \\ \frac{2f^{a}f^{b\sqrt{c+dx}}\sqrt{c+dx}}{bd\log\left(f\right)} - \frac{2f^{a}f^{b\sqrt{c+dx}}}{b^{2}d\log\left(f\right)^{2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*(d*x+c)**(1/2)),x)
```

```
[Out] Piecewise((x, Eq(b, 0) & Eq(d, 0) & Eq(f, 1)), (f**(a + b*sqrt(c)
)*x, Eq(d, 0)), (f**a*x, Eq(b, 0)), (x, Eq(f, 1)), (2*f**a*f**(b*
sqrt(c + d*x))*sqrt(c + d*x)/(b*d*log(f)) - 2*f**a*f**(b*sqrt(c +
 d*x))/(b**2*d*log(f)**2), True))
```

GIAC/XCAS [A] time = 0.664255, size = 1, normalized size = 0.02

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(sqrt(d*x + c)*b + a),x, algorithm="giac")
```

```
[Out] Done
```

3.300 $\int f^{a+b\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=100

$$\frac{6f^{a+b\sqrt[3]{c+dx}}}{b^3d\log^3(f)}-\frac{6\sqrt[3]{c+dx}\,f^{a+b\sqrt[3]{c+dx}}}{b^2d\log^2(f)}+\frac{3(c+dx)^{2/3}f^{a+b\sqrt[3]{c+dx}}}{bd\log(f)}$$

```
[Out] (6*f^(a + b*(c + d*x)^(1/3)))/(b^3*d*Log[f]^3) - (6*f^(a + b*(c +
 d*x)^(1/3))*(c + d*x)^(1/3))/(b^2*d*Log[f]^2) + (3*f^(a + b*(c +
 d*x)^(1/3))*(c + d*x)^(2/3))/(b*d*Log[f])
```

Rubi [A] time = 0.115282, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{6f^{a+b\sqrt[3]{c+dx}}}{b^3d\log^3(f)}-\frac{6\sqrt[3]{c+dx}\,f^{a+b\sqrt[3]{c+dx}}}{b^2d\log^2(f)}+\frac{3(c+dx)^{2/3}f^{a+b\sqrt[3]{c+dx}}}{bd\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*(c + d*x)^(1/3)),x]
```

```
[Out] (6*f^(a + b*(c + d*x)^(1/3)))/(b^3*d*Log[f]^3) - (6*f^(a + b*(c +
 d*x)^(1/3))*(c + d*x)^(1/3))/(b^2*d*Log[f]^2) + (3*f^(a + b*(c +
 d*x)^(1/3))*(c + d*x)^(2/3))/(b*d*Log[f])
```

Rubi in Sympy [A] time = 12.247, size = 88, normalized size = 0.88

$$\frac{3f^{a+b\sqrt[3]{c+dx}}(c+dx)^{\frac{2}{3}}}{bd\log(f)}-\frac{6f^{a+b\sqrt[3]{c+dx}}\sqrt[3]{c+dx}}{b^2d\log(f)^2}+\frac{6f^{a+b\sqrt[3]{c+dx}}}{b^3d\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*(d*x+c)**(1/3)),x)
```

```
[Out] 3*f**(a + b*(c + d*x)**(1/3))*(c + d*x)**(2/3)/(b*d*log(f)) - 6*f
**(a + b*(c + d*x)**(1/3))*(c + d*x)**(1/3)/(b**2*d*log(f)**2) +
6*f**(a + b*(c + d*x)**(1/3))/(b**3*d*log(f)**3)
```

Mathematica [A] time = 0.0441458, size = 60, normalized size = 0.6

$$\frac{3f^{a+b\sqrt[3]{c+dx}}\left(b^2\log^2(f)(c+dx)^{2/3}-2b\log(f)\sqrt[3]{c+dx}+2\right)}{b^3d\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*(c + d*x)^(1/3)),x]
```

```
[Out] (3*f^(a + b*(c + d*x)^(1/3))*(2 - 2*b*(c + d*x)^(1/3)*Log[f] + b^
2*(c + d*x)^(2/3)*Log[f]^2))/(b^3*d*Log[f]^3)
```

Maple [F] time = 0.005, size = 0, normalized size = 0.

$$\int f^{a+b\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*(d*x+c)^(1/3)),x)
```

```
[Out] int(f^(a+b*(d*x+c)^(1/3)),x)
```

Maxima [A] time = 0.952551, size = 84, normalized size = 0.84

$$\frac{3\left((dx+c)^{\frac{2}{3}}b^2f^a\log(f)^2-2\,(dx+c)^{\frac{1}{3}}bf^a\log(f)+2\,f^a\right)f^{(dx+c)^{\frac{1}{3}}b}}{b^3d\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((d*x + c)^(1/3)*b + a),x, algorithm="maxima")
```

```
[Out] 3*((d*x + c)^(2/3)*b^2*f^a*log(f)^2 - 2*(d*x + c)^(1/3)*b*f^a*log
(f) + 2*f^a)*f^((d*x + c)^(1/3)*b)/(b^3*d*log(f)^3)
```

Fricas [A] time = 0.252559, size = 78, normalized size = 0.78

$$\frac{3\left((dx+c)^{\frac{2}{3}}b^2\log(f)^2-2\,(dx+c)^{\frac{1}{3}}b\log(f)+2\right)e^{\left((dx+c)^{\frac{1}{3}}b\log(f)+a\log(f)\right)}}{b^3d\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((d*x + c)^(1/3)*b + a),x, algorithm="fricas")
```

```
[Out] 3*((d*x + c)^(2/3)*b^2*log(f)^2 - 2*(d*x + c)^(1/3)*b*log(f) + 2)
*e^((d*x + c)^(1/3)*b*log(f) + a*log(f))/(b^3*d*log(f)^3)
```

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

$$\int f^{a+b\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*(d*x+c)**(1/3)),x)
```

```
[Out] Integral(f**(a + b*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [A] time = 0.305435, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^((d*x + c)^(1/3)*b + a),x, algorithm="giac")
```

```
[Out] Done
```

3.301 $\int F^{a+\frac{b}{c+dx}}(c+dx)^m\,dx$

Optimal. Leaf size=50

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{c+dx}\right)^{m+1}\text{Gamma}\left(-m-1,-\frac{b\log(F)}{c+dx}\right)}{d}$$

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[-1 - m, -((b*Log[F])/(c + d*x))]*(-(
(b*Log[F])/(c + d*x)))^(1 + m))/d
```

Rubi [A] time = 0.0733071, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{c+dx}\right)^{m+1}\text{Gamma}\left(-m-1,-\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))*(c + d*x)^m,x]
```

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[-1 - m, -((b*Log[F])/(c + d*x))]*(-(
(b*Log[F])/(c + d*x)))^(1 + m))/d
```

Rubi in Sympy [A] time = 5.86443, size = 44, normalized size = 0.88

$$\frac{F^a\left(-\frac{b\log(F)}{c+dx}\right)^{m+1}(c+dx)^{m+1}\left(-m-1,-\frac{b\log(F)}{c+dx}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))*(d*x+c)**m,x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x))**(m + 1)*(c + d*x)**(m + 1)*Gamma(-m -
 1, -b*log(F)/(c + d*x))/d
```

Mathematica [A] time = 0.0418944, size = 50, normalized size = 1.

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{c+dx}\right)^{m+1}\text{Gamma}\left(-m-1,-\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))*(c + d*x)^m,x]
```

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[-1 - m, -((b*Log[F])/(c + d*x))]*(-(
(b*Log[F])/(c + d*x)))^(1 + m))/d
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{dx+c}}(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))*(d*x+c)^m,x)
```

```
[Out] int(F^(a+b/(d*x+c))*(d*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{a+\frac{b}{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*F^(a + b/(d*x + c)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((dx+c)^m F^{\frac{adx+ac+b}{dx+c}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*F^((a*d*x + a*c + b)/(d*x + c)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))*(d*x+c)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{a+\frac{b}{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*F^(a + b/(d*x + c)), x)
```

3.302 $\int F^{a+\frac{b}{c+dx}}(c+dx)^4\,dx$

Optimal. Leaf size=29

$$-\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-\frac{b\log(F)}{c+dx}\right)}{d}$$

```
[Out] -((b^5*F^a*Gamma[-5, -((b*Log[F])/(c + d*x))]*Log[F]^5)/d)
```

Rubi [A] time = 0.0734012, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))*(c + d*x)^4,x]
```

```
[Out] -((b^5*F^a*Gamma[-5, -((b*Log[F])/(c + d*x))]*Log[F]^5)/d)
```

Rubi in Sympy [A] time = 5.90656, size = 29, normalized size = 1.

$$-\frac{F^ab^5\left(-5,-\frac{b\log(F)}{c+dx}\right)\log(F)^5}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))*(d*x+c)**4,x)
```

```
[Out] -F**a*b**5*Gamma(-5, -b*log(F)/(c + d*x))*log(F)**5/d
```

Mathematica [B] time = 0.124079, size = 108, normalized size = 3.72

$$\frac{F^a\left((c+dx)F^{\frac{b}{c+dx}}\left(b^4\log^4(F)+b^3\log^3(F)(c+dx)+2b^2\log^2(F)(c+dx)^2+6b\log(F)(c+dx)^3+24(c+dx)^4\right)-b^5\log^5(F)\text{Ex}\right.}{120d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))*(c + d*x)^4,x]
```

```
[Out] (F^a*(-(b^5*ExpIntegralEi[(b*Log[F])/(c + d*x)]*Log[F]^5) + F^(b/
(c + d*x))*(c + d*x)*(24*(c + d*x)^4 + 6*b*(c + d*x)^3*Log[F] + 2
*b^2*(c + d*x)^2*Log[F]^2 + b^3*(c + d*x)*Log[F]^3 + b^4*Log[F]^4
)))/(120*d)
```

Maple [B] time = 0.049, size = 634, normalized size = 21.9

$$\begin{aligned}&\frac{d^4x^5}{5}F^{\frac{xda+ac+b}{dx+c}} + d^3F^{\frac{xda+ac+b}{dx+c}}cx^4 + 2\,d^2F^{\frac{xda+ac+b}{dx+c}}c^2x^3 + 2\,dF^{\frac{xda+ac+b}{dx+c}}c^3x^2 + F^{\frac{xda+ac+b}{dx+c}}c^4x \\ &+ \frac{c^5}{5\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bd^3x^4}{20}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bcd^2x^3}{5}F^{\frac{xda+ac+b}{dx+c}} + \frac{3\,\ln(F)\,bc^2dx^2}{10}F^{\frac{xda+ac+b}{dx+c}} \\ &+ \frac{\ln(F)\,bc^3x}{5}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bc^4}{20\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{(\ln(F))^2\,b^2d^2x^3}{60}F^{\frac{xda+ac+b}{dx+c}} \\ &+ \frac{db^2\,(\ln(F))^2\,cx^2}{20}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^2c^2\,(\ln(F))^2\,x}{20}F^{\frac{xda+ac+b}{dx+c}} + \frac{(\ln(F))^2\,b^2c^3}{60\,d}F^{\frac{xda+ac+b}{dx+c}} \\ &+ \frac{db^3\,(\ln(F))^3\,x^2}{120}F^{\frac{xda+ac+b}{dx+c}} + \frac{(\ln(F))^3\,b^3cx}{60}F^{\frac{xda+ac+b}{dx+c}} + \frac{(\ln(F))^3\,b^3c^2}{120\,d}F^{\frac{xda+ac+b}{dx+c}} \\ &+ \frac{b^4\,(\ln(F))^4\,x}{120}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^4\,(\ln(F))^4\,c}{120\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^5\,(\ln(F))^5\,F^a}{120\,d}Ei\left(1, -\frac{b\ln(F)}{dx+c}\right)\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))*(d*x+c)^4,x)
```

```
[Out] 1/5*d^4*F^((a*d*x+a*c+b)/(d*x+c))*x^5+d^3*F^((a*d*x+a*c+b)/(d*x+c
))*c*x^4+2*d^2*F^((a*d*x+a*c+b)/(d*x+c))*c^2*x^3+2*d*F^((a*d*x+a*
c+b)/(d*x+c))*c^3*x^2+F^((a*d*x+a*c+b)/(d*x+c))*c^4*x+1/5/d*F^((a
*d*x+a*c+b)/(d*x+c))*c^5+1/20*d^3*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c
))*x^4+1/5*d^2*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c))*c*x^3+3/10*d*b*l
n(F)*F^((a*d*x+a*c+b)/(d*x+c))*c^2*x^2+1/5*b*ln(F)*F^((a*d*x+a*c+
b)/(d*x+c))*c^3*x+1/20/d*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c))*c^4+1/
60*d^2*b^2*ln(F)^2*F^((a*d*x+a*c+b)/(d*x+c))*x^3+1/20*d*b^2*ln(F)
^2*F^((a*d*x+a*c+b)/(d*x+c))*c*x^2+1/20*b^2*ln(F)^2*F^((a*d*x+a*c
+b)/(d*x+c))*c^2*x+1/60/d*b^2*ln(F)^2*F^((a*d*x+a*c+b)/(d*x+c))*c
^3+1/120*d*b^3*ln(F)^3*F^((a*d*x+a*c+b)/(d*x+c))*x^2+1/60*b^3*ln(
F)^3*F^((a*d*x+a*c+b)/(d*x+c))*c*x+1/120/d*b^3*ln(F)^3*F^((a*d*x+
a*c+b)/(d*x+c))*c^2+1/120*b^4*ln(F)^4*F^((a*d*x+a*c+b)/(d*x+c))*x
+1/120/d*b^4*ln(F)^4*F^((a*d*x+a*c+b)/(d*x+c))*c+1/120/d*b^5*ln(F
)^5*F^a*Ei(1,-b*ln(F)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{120}\left(24\,F^ad^4x^5 + 6\left(F^abd^3\log(F) + 20\,F^acd^3\right)x^4 + 2\left(F^ab^2d^2\log(F)^2 + 12\,F^abcd^2\log(F) + 120\,F^ac^2d^2\right)x^3 + \left(F^ab^3d\log(F\right.\right.$$
$$+\int\frac{\left(F^ab^5dx\log(F)^5 - F^ab^4c^2\log(F)^4 - 2\,F^ab^3c^3\log(F)^3 - 6\,F^ab^2c^4\log(F)^2 - 24\,F^abc^5\log(F)\right)F^{\frac{b}{dx+c}}}{120\,(d^2x^2 + 2\,cdx + c^2)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^4*F^(a + b/(d*x + c)),x, algorithm="maxima")
```

```
[Out] 1/120*(24*F^a*d^4*x^5 + 6*(F^a*b*d^3*log(F) + 20*F^a*c*d^3)*x^4 +
 2*(F^a*b^2*d^2*log(F)^2 + 12*F^a*b*c*d^2*log(F) + 120*F^a*c^2*d^
2)*x^3 + (F^a*b^3*d*log(F)^3 + 6*F^a*b^2*c*d*log(F)^2 + 36*F^a*b*
c^2*d*log(F) + 240*F^a*c^3*d)*x^2 + (F^a*b^4*log(F)^4 + 2*F^a*b^3
*c*log(F)^3 + 6*F^a*b^2*c^2*log(F)^2 + 24*F^a*b*c^3*log(F) + 120*
F^a*c^4)*x)*F^(b/(d*x + c)) + integrate(1/120*(F^a*b^5*d*x*log(F)
^5 - F^a*b^4*c^2*log(F)^4 - 2*F^a*b^3*c^3*log(F)^3 - 6*F^a*b^2*c^
4*log(F)^2 - 24*F^a*b*c^5*log(F))*F^(b/(d*x + c))/(d^2*x^2 + 2*c*
d*x + c^2), x)
```

Fricas [A] time = 0.27941, size = 329, normalized size = 11.34

$$-\frac{F^ab^5\text{Ei}\left(\frac{b\log(F)}{dx+c}\right)\log(F)^5 - \left(24\,d^5x^5 + 120\,cd^4x^4 + 240\,c^2d^3x^3 + 240\,c^3d^2x^2 + 120\,c^4dx + 24\,c^5 + \left(b^4dx + b^4c\right)\log(F)^4 + \left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^4*F^(a + b/(d*x + c)),x, algorithm="fricas")
```

```
[Out] -1/120*(F^a*b^5*Ei(b*log(F)/(d*x + c))*log(F)^5 - (24*d^5*x^5 + 1
20*c*d^4*x^4 + 240*c^2*d^3*x^3 + 240*c^3*d^2*x^2 + 120*c^4*d*x +
24*c^5 + (b^4*d*x + b^4*c)*log(F)^4 + (b^3*d^2*x^2 + 2*b^3*c*d*x
+ b^3*c^2)*log(F)^3 + 2*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^
2*d*x + b^2*c^3)*log(F)^2 + 6*(b*d^4*x^4 + 4*b*c*d^3*x^3 + 6*b*c^
2*d^2*x^2 + 4*b*c^3*d*x + b*c^4)*log(F))*F^((a*d*x + a*c + b)/(d*
x + c)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))*(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^4 F^{a+\frac{b}{dx+c}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^4*F^(a + b/(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^4*F^(a + b/(d*x + c)), x)
```

3.303 $\int F^{a+\frac{b}{c+dx}}(c+dx)^3\,dx$

Optimal. Leaf size=28

$$\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-\frac{b\log(F)}{c+dx}\right)}{d}$$

```
[Out] (b^4*F^a*Gamma[-4, -((b*Log[F])/(c + d*x))]*Log[F]^4)/d
```

Rubi [A] time = 0.0739183, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))*(c + d*x)^3,x]
```

```
[Out] (b^4*F^a*Gamma[-4, -((b*Log[F])/(c + d*x))]*Log[F]^4)/d
```

Rubi in Sympy [A] time = 5.87727, size = 27, normalized size = 0.96

$$\frac{F^ab^4\left(-4,-\frac{b\log{(F)}}{c+dx}\right)\log{(F)}^4}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))*(d*x+c)**3,x)
```

```
[Out] F**a*b**4*Gamma(-4, -b*log(F)/(c + d*x))*log(F)**4/d
```

Mathematica [B] time = 0.102927, size = 92, normalized size = 3.29

$$\frac{F^a\left((c+dx)F^{\frac{b}{c+dx}}\left(b^3\log^3(F)+b^2\log^2(F)(c+dx)+2b\log(F)(c+dx)^2+6(c+dx)^3\right)-b^4\log^4(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)\right)}{24d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))*(c + d*x)^3,x]
```

```
[Out] (F^a*(-(b^4*ExpIntegralEi[(b*Log[F])/(c + d*x)]*Log[F]^4) + F^(b/
(c + d*x))*(c + d*x)*(6*(c + d*x)^3 + 2*b*(c + d*x)^2*Log[F] + b^
2*(c + d*x)*Log[F]^2 + b^3*Log[F]^3)))/(24*d)
```

Maple [B] time = 0.041, size = 438, normalized size = 15.6

$$\frac{d^3x^4}{4}F^{\frac{xda+ac+b}{dx+c}} + d^2F^{\frac{xda+ac+b}{dx+c}}cx^3 + \frac{3\,c^2dx^2}{2}F^{\frac{xda+ac+b}{dx+c}} + F^{\frac{xda+ac+b}{dx+c}}c^3x + \frac{c^4}{4\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bd^2x^3}{12}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bcdx^2}{4}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bc^2x}{4}F^{\frac{xda+ac+b}{dx+c}} + \frac{\ln(F)\,bc^3}{12\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{db^2(\ln(F))^2x^2}{24}F^{\frac{xda+ac+b}{dx+c}} + \frac{(\ln(F))^2b^2cx}{12}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^2c^2(\ln(F))^2}{24\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^3(\ln(F))^3x}{24}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^3(\ln(F))^3c}{24\,d}F^{\frac{xda+ac+b}{dx+c}} + \frac{b^4(\ln(F))^4F^a}{24\,d}Ei\left(1, -\frac{b\ln(F)}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))*(d*x+c)^3,x)
```

```
[Out] 1/4*d^3*F^((a*d*x+a*c+b)/(d*x+c))*x^4+d^2*F^((a*d*x+a*c+b)/(d*x+c
))*c*x^3+3/2*d*F^((a*d*x+a*c+b)/(d*x+c))*c^2*x^2+F^((a*d*x+a*c+b)
/(d*x+c))*c^3*x+1/4/d*F^((a*d*x+a*c+b)/(d*x+c))*c^4+1/12*d^2*b*ln
(F)*F^((a*d*x+a*c+b)/(d*x+c))*x^3+1/4*d*b*ln(F)*F^((a*d*x+a*c+b)/
(d*x+c))*c*x^2+1/4*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c))*c^2*x+1/12/d
*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c))*c^3+1/24*d*b^2*ln(F)^2*F^((a*d
*x+a*c+b)/(d*x+c))*x^2+1/12*b^2*ln(F)^2*F^((a*d*x+a*c+b)/(d*x+c))
*c*x+1/24/d*b^2*ln(F)^2*F^((a*d*x+a*c+b)/(d*x+c))*c^2+1/24*b^3*ln
(F)^3*F^((a*d*x+a*c+b)/(d*x+c))*x+1/24/d*b^3*ln(F)^3*F^((a*d*x+a*
c+b)/(d*x+c))*c+1/24/d*b^4*ln(F)^4*F^a*Ei(1,-b*ln(F)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{24}\left(6\,F^ad^3x^4 + 2\left(F^abd^2\log(F) + 12\,F^acd^2\right)x^3 + \left(F^ab^2d\log(F)^2 + 6\,F^abcd\log(F) + 36\,F^ac^2d\right)x^2 + \left(F^ab^3\log(F)^3 + 2\,F^ab^2\right.\right.$$
$$+ \int \frac{\left(F^ab^4dx\log(F)^4 - F^ab^3c^2\log(F)^3 - 2\,F^ab^2c^3\log(F)^2 - 6\,F^abc^4\log(F)\right)F^{\frac{b}{dx+c}}}{24\,(d^2x^2 + 2\,cdx + c^2)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)),x, algorithm="maxima")
```

```
[Out] 1/24*(6*F^a*d^3*x^4 + 2*(F^a*b*d^2*log(F) + 12*F^a*c*d^2)*x^3 + (
F^a*b^2*d*log(F)^2 + 6*F^a*b*c*d*log(F) + 36*F^a*c^2*d)*x^2 + (F^
a*b^3*log(F)^3 + 2*F^a*b^2*c*log(F)^2 + 6*F^a*b*c^2*log(F) + 24*F
^a*c^3)*x)*F^(b/(d*x + c)) + integrate(1/24*(F^a*b^4*d*x*log(F)^4
 - F^a*b^3*c^2*log(F)^3 - 2*F^a*b^2*c^3*log(F)^2 - 6*F^a*b*c^4*lo
g(F))*F^(b/(d*x + c))/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Fricas [A] time = 0.268425, size = 236, normalized size = 8.43

$$-\frac{F^ab^4\mathrm{Ei}\left(\frac{b\log(F)}{dx+c}\right)\log(F)^4 - \left(6\,d^4x^4 + 24\,cd^3x^3 + 36\,c^2d^2x^2 + 24\,c^3dx + 6\,c^4 + \left(b^3dx + b^3c\right)\log(F)^3 + \left(b^2d^2x^2 + 2\,b^2cdx + \right.\right.}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)),x, algorithm="fricas")
```

```
[Out] -1/24*(F^a*b^4*Ei(b*log(F)/(d*x + c))*log(F)^4 - (6*d^4*x^4 + 24*
c*d^3*x^3 + 36*c^2*d^2*x^2 + 24*c^3*d*x + 6*c^4 + (b^3*d*x + b^3*
c)*log(F)^3 + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(F)^2 + 2*
(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*F^((a*d
*x + a*c + b)/(d*x + c)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))*(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{a+\frac{b}{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3*F^(a + b/(d*x + c)), x)
```

3.304 $\int F^{a+\frac{b}{c+dx}}(c+dx)^2\,dx$

Optimal. Leaf size=119

$$-\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{6d}+\frac{b^2\log^2(F)(c+dx)F^{a+\frac{b}{c+dx}}}{6d}+\frac{(c+dx)^3F^{a+\frac{b}{c+dx}}}{3d}+\frac{b\log(F)(c+dx)^2F^{a+\frac{b}{c+dx}}}{6d}$$

```
[Out] (F^(a + b/(c + d*x))*(c + d*x)^3)/(3*d) + (b*F^(a + b/(c + d*x))*
(c + d*x)^2*Log[F])/(6*d) + (b^2*F^(a + b/(c + d*x))*(c + d*x)*Lo
g[F]^2)/(6*d) - (b^3*F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)]*Log[
F]^3)/(6*d)
```

Rubi [A] time = 0.218763, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{6d}+\frac{b^2\log^2(F)(c+dx)F^{a+\frac{b}{c+dx}}}{6d}+\frac{(c+dx)^3F^{a+\frac{b}{c+dx}}}{3d}+\frac{b\log(F)(c+dx)^2F^{a+\frac{b}{c+dx}}}{6d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))*(c + d*x)^2,x]
```

```
[Out] (F^(a + b/(c + d*x))*(c + d*x)^3)/(3*d) + (b*F^(a + b/(c + d*x))*
(c + d*x)^2*Log[F])/(6*d) + (b^2*F^(a + b/(c + d*x))*(c + d*x)*Lo
g[F]^2)/(6*d) - (b^3*F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)]*Log[
F]^3)/(6*d)
```

Rubi in Sympy [A] time = 17.8787, size = 99, normalized size = 0.83

$$-\frac{F^ab^3\log(F)^3\operatorname{Ei}\left(\frac{b\log(F)}{c+dx}\right)}{6d}+\frac{F^{a+\frac{b}{c+dx}}b^2(c+dx)\log(F)^2}{6d}+\frac{F^{a+\frac{b}{c+dx}}b(c+dx)^2\log(F)}{6d}+\frac{F^{a+\frac{b}{c+dx}}(c+dx)^3}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))*(d*x+c)**2,x)
```

```
[Out] -F**a*b**3*log(F)**3*Ei(b*log(F)/(c + d*x))/(6*d) + F**(a + b/(c
+ d*x))*b**2*(c + d*x)*log(F)**2/(6*d) + F**(a + b/(c + d*x))*b*(
c + d*x)**2*log(F)/(6*d) + F**(a + b/(c + d*x))*(c + d*x)**3/(3*d
)
```

Mathematica [A] time = 0.0868379, size = 76, normalized size = 0.64

$$\frac{F^a\left((c+dx)F^{\frac{b}{c+dx}}\left(b^2\log^2(F)+b\log(F)(c+dx)+2(c+dx)^2\right)-b^3\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)\right)}{6d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))*(c + d*x)^2,x]
```

```
[Out] (F^a*(-(b^3*ExpIntegralEi[(b*Log[F])/(c + d*x)]*Log[F]^3) + F^(b/
(c + d*x))*(c + d*x)*(2*(c + d*x)^2 + b*(c + d*x)*Log[F] + b^2*Lo
g[F]^2)))/(6*d)
```

Maple [B] time = 0.037, size = 279, normalized size = 2.3

$$\frac{d^2x^3}{3}F^{\frac{xda+ac+b}{dx+c}}+dF^{\frac{xda+ac+b}{dx+c}}cx^2+F^{\frac{xda+ac+b}{dx+c}}c^2x+\frac{c^3}{3d}F^{\frac{xda+ac+b}{dx+c}}+\frac{\ln(F)bdx^2}{6}F^{\frac{xda+ac+b}{dx+c}}+\frac{bcx\ln(F)}{3}F^{\frac{xda+ac+b}{dx+c}}+\frac{\ln(F)bc^2}{6d}F^{\frac{xda+ac+b}{dx+c}}+\frac{b^2(\ln(F))^2x}{6}F^{\frac{xda+ac+b}{dx+c}}+\frac{b^2(\ln(F))^2c}{6d}F^{\frac{xda+ac+b}{dx+c}}+\frac{b^3(\ln(F))^3F^a}{6d}Ei\left(1,-\frac{b\ln(F)}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))*(d*x+c)^2,x)
```

```
[Out] 1/3*d^2*F^((a*d*x+a*c+b)/(d*x+c))*x^3+d*F^((a*d*x+a*c+b)/(d*x+c))
*c*x^2+F^((a*d*x+a*c+b)/(d*x+c))*c^2*x+1/3/d*F^((a*d*x+a*c+b)/(d*
x+c))*c^3+1/6*d*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c))*x^2+1/3*b*ln(F)
*F^((a*d*x+a*c+b)/(d*x+c))*c*x+1/6/d*b*ln(F)*F^((a*d*x+a*c+b)/(d*
x+c))*c^2+1/6*b^2*ln(F)^2*F^((a*d*x+a*c+b)/(d*x+c))*x+1/6/d*b^2*l
n(F)^2*F^((a*d*x+a*c+b)/(d*x+c))*c+1/6/d*b^3*ln(F)^3*F^a*Ei(1,-b*
ln(F)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{6}\left(2F^ad^2x^3+(F^abd\log(F)+6F^acd)x^2+\left(F^ab^2\log(F)^2+2F^abc\log(F)+6F^ac^2\right)x\right)F^{\frac{b}{dx+c}}+\int\frac{\left(F^ab^3dx\log(F)^3-F^ab^2c^2\log(F)^2-2F^abc^3\log(F)\right)F^{\frac{b}{dx+c}}}{6(d^2x^2+2cdx+c^2)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)),x, algorithm="maxima")
```

```
[Out] 1/6*(2*F^a*d^2*x^3 + (F^a*b*d*log(F) + 6*F^a*c*d)*x^2 + (F^a*b^2*
log(F)^2 + 2*F^a*b*c*log(F) + 6*F^a*c^2)*x)*F^(b/(d*x + c)) + int
egrate(1/6*(F^a*b^3*d*x*log(F)^3 - F^a*b^2*c^2*log(F)^2 - 2*F^a*b
*c^3*log(F))*F^(b/(d*x + c))/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Fricas [A] time = 0.248429, size = 162, normalized size = 1.36

$$-\frac{F^ab^3\mathrm{Ei}\left(\frac{b\log(F)}{dx+c}\right)\log(F)^3-\left(2d^3x^3+6cd^2x^2+6c^2dx+2c^3+\left(b^2dx+b^2c\right)\log(F)^2+\left(bd^2x^2+2bcdx+bc^2\right)\log(F)\right)F^{ad}}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)),x, algorithm="fricas")
```

```
[Out] -1/6*(F^a*b^3*Ei(b*log(F)/(d*x + c))*log(F)^3 - (2*d^3*x^3 + 6*c*
d^2*x^2 + 6*c^2*d*x + 2*c^3 + (b^2*d*x + b^2*c)*log(F)^2 + (b*d^2
*x^2 + 2*b*c*d*x + b*c^2)*log(F))*F^((a*d*x + a*c + b)/(d*x + c))
)/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))*(d*x+c)**2,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^2 F^{a+\frac{b}{dx+c}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)),x, algorithm="giac")

[Out] integrate((d*x + c)^2*F^(a + b/(d*x + c)), x)
```

3.305 $\int F^{a+\frac{b}{c+dx}}(c+dx)\,dx$

Optimal. Leaf size=85

$$-\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{2d}+\frac{(c+dx)^2F^{a+\frac{b}{c+dx}}}{2d}+\frac{b\log(F)(c+dx)F^{a+\frac{b}{c+dx}}}{2d}$$

```
[Out] (F^(a + b/(c + d*x))*(c + d*x)^2)/(2*d) + (b*F^(a + b/(c + d*x))*
(c + d*x)*Log[F])/(2*d) - (b^2*F^a*ExpIntegralEi[(b*Log[F])/(c +
d*x)]*Log[F]^2)/(2*d)
```

Rubi [A] time = 0.136544, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$-\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{2d}+\frac{(c+dx)^2F^{a+\frac{b}{c+dx}}}{2d}+\frac{b\log(F)(c+dx)F^{a+\frac{b}{c+dx}}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))*(c + d*x),x]
```

```
[Out] (F^(a + b/(c + d*x))*(c + d*x)^2)/(2*d) + (b*F^(a + b/(c + d*x))*
(c + d*x)*Log[F])/(2*d) - (b^2*F^a*ExpIntegralEi[(b*Log[F])/(c +
d*x)]*Log[F]^2)/(2*d)
```

Rubi in Sympy [A] time = 10.6649, size = 70, normalized size = 0.82

$$-\frac{F^ab^2\log(F)^2\operatorname{Ei}\left(\frac{b\log(F)}{c+dx}\right)}{2d}+\frac{F^{a+\frac{b}{c+dx}}b\,(c+dx)\log(F)}{2d}+\frac{F^{a+\frac{b}{c+dx}}(c+dx)^2}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))*(d*x+c),x)
```

```
[Out] -F**a*b**2*log(F)**2*Ei(b*log(F)/(c + d*x))/(2*d) + F**(a + b/(c
+ d*x))*b*(c + d*x)*log(F)/(2*d) + F**(a + b/(c + d*x))*(c + d*x)
**2/(2*d)
```

Mathematica [A] time = 0.0578955, size = 58, normalized size = 0.68

$$\frac{F^a\left((c+dx)F^{\frac{b}{c+dx}}(b\log(F)+c+dx)-b^2\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))*(c + d*x),x]
```

```
[Out] (F^a*(-(b^2*ExpIntegralEi[(b*Log[F])/(c + d*x)]*Log[F]^2) + F^(b/
(c + d*x))*(c + d*x)*(c + d*x + b*Log[F])))/(2*d)
```

Maple [A] time = 0.03, size = 158, normalized size = 1.9

$$\frac{dx^2}{2}F^{\frac{xda+ac+b}{dx+c}}+F^{\frac{xda+ac+b}{dx+c}}cx+\frac{c^2}{2d}F^{\frac{xda+ac+b}{dx+c}}+\frac{b\ln(F)x}{2}F^{\frac{xda+ac+b}{dx+c}}+\frac{cb\ln(F)}{2d}F^{\frac{xda+ac+b}{dx+c}}+\frac{b^2(\ln(F))^2F^a}{2d}Ei\left(1,-\frac{b\ln(F)}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))*(d*x+c),x)
```

```
[Out] 1/2*d*F^((a*d*x+a*c+b)/(d*x+c))*x^2+F^((a*d*x+a*c+b)/(d*x+c))*c*x
+1/2/d*F^((a*d*x+a*c+b)/(d*x+c))*c^2+1/2*b*ln(F)*F^((a*d*x+a*c+b)
/(d*x+c))*x+1/2/d*b*ln(F)*F^((a*d*x+a*c+b)/(d*x+c))*c+1/2/d*b^2*l
n(F)^2*F^a*Ei(1,-b*ln(F)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(F^a dx^2+\left(F^a b\log(F)+2F^a c\right)x\right)F^{\frac{b}{dx+c}}+\int\frac{\left(F^a b^2 dx\log(F)^2-F^a bc^2\log(F)\right)F^{\frac{b}{dx+c}}}{2\left(d^2x^2+2cdx+c^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)),x, algorithm="maxima")
```

```
[Out] 1/2*(F^a*d*x^2 + (F^a*b*log(F) + 2*F^a*c)*x)*F^(b/(d*x + c)) + in
tegrate(1/2*(F^a*b^2*d*x*log(F)^2 - F^a*b*c^2*log(F))*F^(b/(d*x +
 c))/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Fricas [A] time = 0.250085, size = 104, normalized size = 1.22

$$-\frac{F^a b^2\mathrm{Ei}\left(\frac{b\log(F)}{dx+c}\right)\log(F)^2-\left(d^2x^2+2cdx+c^2+(bdx+bc)\log(F)\right)F^{\frac{adx+ac+b}{dx+c}}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)),x, algorithm="fricas")
```

```
[Out] -1/2*(F^a*b^2*Ei(b*log(F)/(d*x + c))*log(F)^2 - (d^2*x^2 + 2*c*d*
x + c^2 + (b*d*x + b*c)*log(F))*F^((a*d*x + a*c + b)/(d*x + c)))/
d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))*(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)F^{a+\frac{b}{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)),x, algorithm="giac")

[Out] integrate((d*x + c)*F^(a + b/(d*x + c)), x)
```

3.306 $\int F^{a+\frac{b}{c+dx}}\,dx$

Optimal. Leaf size=46

$$\frac{(c+dx)F^{a+\frac{b}{c+dx}}}{d}-\frac{bF^a\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{d}$$

```
[Out] (F^(a + b/(c + d*x))*(c + d*x))/d - (b*F^a*ExpIntegralEi[(b*Log[F
])/(c + d*x)]*Log[F])/d
```

Rubi [A] time = 0.0856284, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{(c+dx)F^{a+\frac{b}{c+dx}}}{d}-\frac{bF^a\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)),x]
```

```
[Out] (F^(a + b/(c + d*x))*(c + d*x))/d - (b*F^a*ExpIntegralEi[(b*Log[F
])/(c + d*x)]*Log[F])/d
```

Rubi in Sympy [A] time = 6.16692, size = 37, normalized size = 0.8

$$-\frac{F^a b\log(F)\,\mathrm{Ei}\left(\frac{b\log(F)}{c+dx}\right)}{d}+\frac{F^{a+\frac{b}{c+dx}}(c+dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)),x)
```

```
[Out] -F**a*b*log(F)*Ei(b*log(F)/(c + d*x))/d + F**(a + b/(c + d*x))*(c
 + d*x)/d
```

Mathematica [A] time = 0.0259141, size = 42, normalized size = 0.91

$$\frac{F^a\left((c+dx)F^{\frac{b}{c+dx}}-b\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)),x]
```

```
[Out] (F^a*(F^(b/(c + d*x))*(c + d*x) - b*ExpIntegralEi[(b*Log[F])/(c +
 d*x)]*Log[F]))/d
```

Maple [A] time = 0.023, size = 71, normalized size = 1.5

$$F^{\frac{xda+ac+b}{dx+c}}x+\frac{c}{d}F^{\frac{xda+ac+b}{dx+c}}+\frac{b\ln(F)F^a}{d}Ei\left(1,-\frac{b\ln(F)}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)),x)
```

```
[Out] F^((a*d*x+a*c+b)/(d*x+c))*x+1/d*F^((a*d*x+a*c+b)/(d*x+c))*c+b/d*l
n(F)*F^a*Ei(1,-b*ln(F)/(d*x+c))
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$F^a bd \int \frac{F^{\frac{b}{dx+c}} x}{d^2x^2 + 2\,cdx + c^2}\,dx \log(F) + F^a F^{\frac{b}{dx+c}} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)),x, algorithm="maxima")
```

```
[Out] F^a*b*d*integrate(F^(b/(d*x + c))*x/(d^2*x^2 + 2*c*d*x + c^2), x)
*log(F) + F^a*F^(b/(d*x + c))*x
```

Fricas [A]   time = 0.251727, size = 69, normalized size = 1.5

$$-\frac{F^a b \mathrm{Ei}\left(\frac{b \log(F)}{dx+c}\right) \log(F) - (dx+c)F^{\frac{adx+ac+b}{dx+c}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)),x, algorithm="fricas")
```

```
[Out] -(F^a*b*Ei(b*log(F)/(d*x + c))*log(F) - (d*x + c)*F^((a*d*x + a*c
 + b)/(d*x + c)))/d
```

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

$$\int F^{a+\frac{b}{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)),x)
```

```
[Out] Integral(F**(a + b/(c + d*x)), x)
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)),x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)), x)
```

3.307 $\int \frac{F^{a+\frac{b}{c+dx}}}{c+dx}\, dx$

Optimal. Leaf size=20

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{d}$$

```
[Out] -((F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)])/d)
```

Rubi [A] time = 0.0708874, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x),x]
```

```
[Out] -((F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)])/d)
```

Rubi in Sympy [A] time = 4.76108, size = 17, normalized size = 0.85

$$-\frac{F^a\,\text{Ei}\left(\frac{b\log(F)}{c+dx}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c),x)
```

```
[Out] -F**a*Ei(b*log(F)/(c + d*x))/d
```

Mathematica [A] time = 0.0101748, size = 20, normalized size = 1.

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x),x]
```

```
[Out] -((F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)])/d)
```

Maple [A] time = 0.026, size = 22, normalized size = 1.1

$$\frac{F^a}{d}Ei\left(1,-\frac{b\ln(F)}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(d*x+c),x)

[Out] 1/d*F^a*Ei(1,-b*ln(F)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c),x, algorithm="maxima")

[Out] integrate(F^(a + b/(d*x + c))/(d*x + c), x)
```

Fricas [A] time = 0.280018, size = 27, normalized size = 1.35

$$-\frac{F^a \mathrm{Ei}\left(\frac{b\log(F)}{dx+c}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c),x, algorithm="fricas")

[Out] -F^a*Ei(b*log(F)/(d*x + c))/d
```

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

$$\int \frac{F^{a+\frac{b}{c+dx}}}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(d*x+c),x)

[Out] Integral(F**(a + b/(c + d*x))/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c),x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c))/(d*x + c), x)
```

3.308 $\int \frac{F^{a+\frac{b}{c+dx}}}{(c+dx)^2} dx$

Optimal. Leaf size=25

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\log(F)}$$

```
[Out] -(F^(a + b/(c + d*x))/(b*d*Log[F]))
```

Rubi [A] time = 0.0659469, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x)^2,x]

[Out] -(F^(a + b/(c + d*x))/(b*d*Log[F]))
```

Rubi in Sympy [A] time = 5.35887, size = 17, normalized size = 0.68

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\log{(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c)**2,x)

[Out] -F**(a + b/(c + d*x))/(b*d*log(F))
```

Mathematica [A] time = 0.0106558, size = 25, normalized size = 1.

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x)^2,x]

[Out] -(F^(a + b/(c + d*x))/(b*d*Log[F]))
```

Maple [A] time = 0.003, size = 26, normalized size = 1.

$$-\frac{1}{\ln(F)\,bd}F^{a+\frac{b}{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(d*x+c)^2,x)

[Out] -F^(a+b/(d*x+c))/b/d/ln(F)
```

Maxima [A] time = 0.775547, size = 34, normalized size = 1.36

$$-\frac{F^{a+\frac{b}{dx+c}}}{bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^2,x, algorithm="maxima")

[Out] -F^(a + b/(d*x + c))/(b*d*log(F))
```

Fricas [A] time = 0.260342, size = 42, normalized size = 1.68

$$-\frac{F^{\frac{adx+ac+b}{dx+c}}}{bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^2,x, algorithm="fricas")

[Out] -F^((a*d*x + a*c + b)/(d*x + c))/(b*d*log(F))
```

Sympy [A] time = 0.712625, size = 34, normalized size = 1.36

$$\begin{cases} -\frac{F^{a+\frac{b}{c+dx}}}{bd\log(F)} & \text{for } bd\log(F) \neq 0 \\ -\frac{1}{cd+d^2x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(d*x+c)**2,x)

[Out] Piecewise((-F**(a + b/(c + d*x))/(b*d*log(F)), Ne(b*d*log(F), 0))
, (-1/(c*d + d**2*x), True))
```

GIAC/XCAS [A] time = 0.254895, size = 34, normalized size = 1.36

$$-\frac{F^{a+\frac{b}{dx+c}}}{bd\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^2,x, algorithm="giac")

[Out] -F^(a + b/(d*x + c))/(b*d*ln(F))
```

3.309 $\int \frac{F^{a+\frac{b}{c+dx}}}{(c+dx)^3} dx$

Optimal. Leaf size=57

$$\frac{F^{a+\frac{b}{c+dx}}}{b^2 d \log^2(F)} - \frac{F^{a+\frac{b}{c+dx}}}{bd \log(F)(c+dx)}$$

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

Rubi [A] time = 0.138672, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{F^{a+\frac{b}{c+dx}}}{b^2 d \log^2(F)} - \frac{F^{a+\frac{b}{c+dx}}}{bd \log(F)(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x)^3,x]
```

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

Rubi in Sympy [A] time = 10.9314, size = 41, normalized size = 0.72

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\left(c+dx\right)\log\left(F\right)} + \frac{F^{a+\frac{b}{c+dx}}}{b^2 d \log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c)**3,x)
```

```
[Out] -F**(a + b/(c + d*x))/(b*d*(c + d*x)*log(F)) + F**(a + b/(c + d*x
))/(b**2*d*log(F)**2)
```

Mathematica [A] time = 0.0270277, size = 41, normalized size = 0.72

$$\frac{F^{a+\frac{b}{c+dx}}(-b\log(F)+c+dx)}{b^2 d \log^2(F)(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x)^3,x]
```

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

Maple [A] time = 0.03, size = 106, normalized size = 1.9

$$\frac{1}{(dx+c)^2}\left(\frac{dx^2}{(\ln(F))^2 b^2} e^{\left(a+\frac{b}{dx+c}\right)\ln(F)} - \frac{(b\ln(F)-2c)x}{(\ln(F))^2 b^2} e^{\left(a+\frac{b}{dx+c}\right)\ln(F)} - \frac{c(b\ln(F)-c)}{(\ln(F))^2 b^2 d} e^{\left(a+\frac{b}{dx+c}\right)\ln(F)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(d*x+c)^3,x)
```

```
[Out] (1/ln(F)^2/b^2*d*x^2*exp((a+b/(d*x+c))*ln(F))-(b*ln(F)-2*c)/ln(F)
^2/b^2*x*exp((a+b/(d*x+c))*ln(F))-c*(b*ln(F)-c)/d/ln(F)^2/b^2*exp
((a+b/(d*x+c))*ln(F)))/(d*x+c)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^3, x)
```

Fricas [A] time = 0.25111, size = 69, normalized size = 1.21

$$\frac{(dx - b\log(F) + c)F^{\frac{adx+ac+b}{dx+c}}}{(b^2d^2x + b^2cd)\log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^3,x, algorithm="fricas")
```

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

Sympy [A] time = 0.270831, size = 44, normalized size = 0.77

$$\frac{F^{a+\frac{b}{c+dx}}(-b\log(F) + c + dx)}{b^2cd\log(F)^2 + b^2d^2x\log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(d*x+c)**3,x)
```

```
[Out] F**(a + b/(c + d*x))*(-b*log(F) + c + d*x)/(b**2*c*d*log(F)**2 +
b**2*d**2*x*log(F)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^3, x)
```

3.310 $\int \frac{F^{a+\frac{b}{c+dx}}}{(c+dx)^4} dx$

Optimal. Leaf size=90

$$-\frac{2F^{a+\frac{b}{c+dx}}}{b^3 d \log^3(F)}+\frac{2F^{a+\frac{b}{c+dx}}}{b^2 d \log^2(F)(c+dx)}-\frac{F^{a+\frac{b}{c+dx}}}{bd \log(F)(c+dx)^2}$$

```
[Out] (-2*F^(a + b/(c + d*x)))/(b^3*d*Log[F]^3) + (2*F^(a + b/(c + d*x)
))/(b^2*d*(c + d*x)*Log[F]^2) - F^(a + b/(c + d*x))/(b*d*(c + d*x
)^2*Log[F])
```

Rubi [A] time = 0.217708, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{2F^{a+\frac{b}{c+dx}}}{b^3 d \log^3(F)}+\frac{2F^{a+\frac{b}{c+dx}}}{b^2 d \log^2(F)(c+dx)}-\frac{F^{a+\frac{b}{c+dx}}}{bd \log(F)(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x)^4,x]
```

```
[Out] (-2*F^(a + b/(c + d*x)))/(b^3*d*Log[F]^3) + (2*F^(a + b/(c + d*x)
))/(b^2*d*(c + d*x)*Log[F]^2) - F^(a + b/(c + d*x))/(b*d*(c + d*x
)^2*Log[F])
```

Rubi in Sympy [A] time = 18.3862, size = 71, normalized size = 0.79

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\,(c+dx)^2\log{(F)}}+\frac{2F^{a+\frac{b}{c+dx}}}{b^2 d\,(c+dx)\log{(F)}^2}-\frac{2F^{a+\frac{b}{c+dx}}}{b^3 d\log{(F)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c)**4,x)
```

```
[Out] -F**(a + b/(c + d*x))/(b*d*(c + d*x)**2*log(F)) + 2*F**(a + b/(c
+ d*x))/(b**2*d*(c + d*x)*log(F)**2) - 2*F**(a + b/(c + d*x))/(b*
*3*d*log(F)**3)
```

Mathematica [A] time = 0.0367648, size = 60, normalized size = 0.67

$$-\frac{F^{a+\frac{b}{c+dx}}\left(b^2\log^2(F)-2b\log(F)(c+dx)+2(c+dx)^2\right)}{b^3 d \log^3(F)(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x)^4,x]
```

```
[Out] -((F^(a + b/(c + d*x))*(2*(c + d*x)^2 - 2*b*(c + d*x)*Log[F] + b^
2*Log[F]^2))/(b^3*d*(c + d*x)^2*Log[F]^3))
```

Maple [A] time = 0.042, size = 169, normalized size = 1.9

$$\frac{1}{(dx+c)^3}\left(-2\frac{d^2x^3}{(\ln(F))^3 b^3}e^{\left(a+\frac{b}{dx+c}\right)\ln(F)} - \frac{\left((\ln(F))^2 b^2 - 4cb\ln(F) + 6c^2\right)x}{(\ln(F))^3 b^3}e^{\left(a+\frac{b}{dx+c}\right)\ln(F)} + 2\frac{d(b\ln(F)-3c)x^2}{(\ln(F))^3 b^3}e^{\left(a+\frac{b}{dx+c}\right)\ln(F)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(d*x+c)^4,x)
```

```
[Out] (-2*d^2/ln(F)^3/b^3*x^3*exp((a+b/(d*x+c))*ln(F))-(ln(F)^2*b^2-4*c
*b*ln(F)+6*c^2)/ln(F)^3/b^3*x*exp((a+b/(d*x+c))*ln(F))+2*d*(b*ln(
F)-3*c)/ln(F)^3/b^3*x^2*exp((a+b/(d*x+c))*ln(F))-(ln(F)^2*b^2-2*c
*b*ln(F)+2*c^2)*c/b^3/ln(F)^3/d*exp((a+b/(d*x+c))*ln(F)))/(d*x+c)
^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^4,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^4, x)
```

Fricas [A] time = 0.251464, size = 128, normalized size = 1.42

$$-\frac{\left(2\,d^2x^2 + b^2\log(F)^2 + 4\,cdx + 2\,c^2 - 2\,(bdx + bc)\log(F)\right)F^{\frac{adx+ac+b}{dx+c}}}{\left(b^3d^3x^2 + 2\,b^3cd^2x + b^3c^2d\right)\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^4,x, algorithm="fricas")
```

```
[Out] -(2*d^2*x^2 + b^2*log(F)^2 + 4*c*d*x + 2*c^2 - 2*(b*d*x + b*c)*lo
g(F))*F^((a*d*x + a*c + b)/(d*x + c))/((b^3*d^3*x^2 + 2*b^3*c*d^2
*x + b^3*c^2*d)*log(F)^3)
```

Sympy [A] time = 0.34292, size = 102, normalized size = 1.13

$$\frac{F^{a+\frac{b}{c+dx}}\left(-b^2\log(F)^2 + 2bc\log(F) + 2bdx\log(F) - 2c^2 - 4cdx - 2d^2x^2\right)}{b^3c^2d\log(F)^3 + 2b^3cd^2x\log(F)^3 + b^3d^3x^2\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(d*x+c)**4,x)
```

```
[Out] F**(a + b/(c + d*x))*(-b**2*log(F)**2 + 2*b*c*log(F) + 2*b*d*x*lo
g(F) - 2*c**2 - 4*c*d*x - 2*d**2*x**2)/(b**3*c**2*d*log(F)**3 + 2
*b**3*c*d**2*x*log(F)**3 + b**3*d**3*x**2*log(F)**3)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^4,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^4, x)
```

3.311 $\int \frac{F^{a+\frac{b}{c+dx}}}{(c+dx)^5} \, dx$

Optimal. Leaf size=122

$$\frac{6F^{a+\frac{b}{c+dx}}}{b^4 d \log^4(F)} - \frac{6F^{a+\frac{b}{c+dx}}}{b^3 d \log^3(F)(c+dx)} + \frac{3F^{a+\frac{b}{c+dx}}}{b^2 d \log^2(F)(c+dx)^2} - \frac{F^{a+\frac{b}{c+dx}}}{bd \log(F)(c+dx)^3}$$

```
[Out] (6*F^(a + b/(c + d*x)))/(b^4*d*Log[F]^4) - (6*F^(a + b/(c + d*x))
)/(b^3*d*(c + d*x)*Log[F]^3) + (3*F^(a + b/(c + d*x)))/(b^2*d*(c
+ d*x)^2*Log[F]^2) - F^(a + b/(c + d*x))/(b*d*(c + d*x)^3*Log[F])
```

Rubi [A] time = 0.297368, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{6F^{a+\frac{b}{c+dx}}}{b^4 d \log^4(F)} - \frac{6F^{a+\frac{b}{c+dx}}}{b^3 d \log^3(F)(c+dx)} + \frac{3F^{a+\frac{b}{c+dx}}}{b^2 d \log^2(F)(c+dx)^2} - \frac{F^{a+\frac{b}{c+dx}}}{bd \log(F)(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x)^5,x]
```

```
[Out] (6*F^(a + b/(c + d*x)))/(b^4*d*Log[F]^4) - (6*F^(a + b/(c + d*x))
)/(b^3*d*(c + d*x)*Log[F]^3) + (3*F^(a + b/(c + d*x)))/(b^2*d*(c
+ d*x)^2*Log[F]^2) - F^(a + b/(c + d*x))/(b*d*(c + d*x)^3*Log[F])
```

Rubi in Sympy [A] time = 27.5714, size = 100, normalized size = 0.82

$$-\frac{F^{a+\frac{b}{c+dx}}}{bd\,(c+dx)^3 \log{(F)}} + \frac{3F^{a+\frac{b}{c+dx}}}{b^2 d\,(c+dx)^2 \log{(F)}^2} - \frac{6F^{a+\frac{b}{c+dx}}}{b^3 d\,(c+dx) \log{(F)}^3} + \frac{6F^{a+\frac{b}{c+dx}}}{b^4 d \log{(F)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c)**5,x)
```

```
[Out] -F**(a + b/(c + d*x))/(b*d*(c + d*x)**3*log(F)) + 3*F**(a + b/(c
+ d*x))/(b**2*d*(c + d*x)**2*log(F)**2) - 6*F**(a + b/(c + d*x))/
(b**3*d*(c + d*x)*log(F)**3) + 6*F**(a + b/(c + d*x))/(b**4*d*log
(F)**4)
```

Mathematica [A] time = 0.058682, size = 76, normalized size = 0.62

$$\frac{F^{a+\frac{b}{c+dx}} \left(-b^3 \log^3(F) + 3b^2 \log^2(F)(c+dx) - 6b \log(F)(c+dx)^2 + 6(c+dx)^3\right)}{b^4 d \log^4(F)(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x)^5,x]
```

```
[Out] (F^(a + b/(c + d*x))*(6*(c + d*x)^3 - 6*b*(c + d*x)^2*Log[F] + 3*
b^2*(c + d*x)*Log[F]^2 - b^3*Log[F]^3))/(b^4*d*(c + d*x)^3*Log[F]
^4)
```

Maple [A] time = 0.053, size = 243, normalized size = 2.

$$\frac{1}{(dx+c)^4}\left(-\frac{\left((\ln(F))^3 b^3-6\,(\ln(F))^2 b^2c+18\,\ln(F)\,bc^2-24\,c^3\right)x}{(\ln(F))^4\,b^4}\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}+6\,\frac{d^3x^4}{(\ln(F))^4\,b^4}\mathrm{e}^{\left(a+\frac{b}{dx+c}\right)\ln(F)}+3\,\frac{d\left((\ln(F)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(d*x+c)^5,x)
```

```
[Out] (-(ln(F)^3*b^3-6*ln(F)^2*b^2*c+18*ln(F)*b*c^2-24*c^3)/ln(F)^4/b^4
*x*exp((a+b/(d*x+c))*ln(F))+6/ln(F)^4/b^4*d^3*x^4*exp((a+b/(d*x+c
))*ln(F))+3*d*(ln(F)^2*b^2-6*c*b*ln(F)+12*c^2)/ln(F)^4/b^4*x^2*ex
p((a+b/(d*x+c))*ln(F))-6*d^2*(b*ln(F)-4*c)/ln(F)^4/b^4*x^3*exp((a
+b/(d*x+c))*ln(F))-(ln(F)^3*b^3-3*ln(F)^2*b^2*c+6*ln(F)*b*c^2-6*c
^3)*c/b^4/ln(F)^4/d*exp((a+b/(d*x+c))*ln(F)))/(d*x+c)^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^5,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^5, x)
```

Fricas [A] time = 0.25486, size = 203, normalized size = 1.66

$$\frac{\left(6\,d^3x^3-b^3\log(F)^3+18\,cd^2x^2+18\,c^2dx+6\,c^3+3\,\left(b^2dx+b^2c\right)\log(F)^2-6\,\left(bd^2x^2+2\,bcdx+bc^2\right)\log(F)\right)F^{\frac{adx+ac+b}{dx+c}}}{\left(b^4d^4x^3+3\,b^4cd^3x^2+3\,b^4c^2d^2x+b^4c^3d\right)\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^5,x, algorithm="fricas")
```

```
[Out] (6*d^3*x^3 - b^3*log(F)^3 + 18*c*d^2*x^2 + 18*c^2*d*x + 6*c^3 + 3
*(b^2*d*x + b^2*c)*log(F)^2 - 6*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*l
og(F))*F^((a*d*x + a*c + b)/(d*x + c))/((b^4*d^4*x^3 + 3*b^4*c*d^
3*x^2 + 3*b^4*c^2*d^2*x + b^4*c^3*d)*log(F)^4)
```

Sympy [A] time = 0.412339, size = 177, normalized size = 1.45

$$\frac{F^{a+\frac{b}{c+dx}}\left(-b^3\log(F)^3+3b^2c\log(F)^2+3b^2dx\log(F)^2-6bc^2\log(F)-12bcdx\log(F)-6bd^2x^2\log(F)+6c^3+18c^2dx+18c\right.}{b^4c^3d\log(F)^4+3b^4c^2d^2x\log(F)^4+3b^4cd^3x^2\log(F)^4+b^4d^4x^3\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(d*x+c)**5,x)
```

```
[Out] F**(a + b/(c + d*x))*(-b**3*log(F)**3 + 3*b**2*c*log(F)**2 + 3*b*
*2*d*x*log(F)**2 - 6*b*c**2*log(F) - 12*b*c*d*x*log(F) - 6*b*d**2
```

```
*x**2*log(F) + 6*c**3 + 18*c**2*d*x + 18*c*d**2*x**2 + 6*d**3*x**
3)/(b**4*c**3*d*log(F)**4 + 3*b**4*c**2*d**2*x*log(F)**4 + 3*b**4
*c*d**3*x**2*log(F)**4 + b**4*d**4*x**3*log(F)**4)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^5,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^5, x)
```

3.312 $\int \frac{F^{a+\frac{b}{c+dx}}}{(c+dx)^6}\, dx$

Optimal. Leaf size=29

$$-\frac{F^a \text{Gamma}\left(5,-\frac{b\log(F)}{c+dx}\right)}{b^5 d\log^5(F)}$$

```
[Out] -((F^a*Gamma[5, -((b*Log[F])/(c + d*x))])/(b^5*d*Log[F]^5))
```

Rubi [A] time = 0.070371, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a \text{Gamma}\left(5,-\frac{b\log(F)}{c+dx}\right)}{b^5 d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x)^6,x]
```

```
[Out] -((F^a*Gamma[5, -((b*Log[F])/(c + d*x))])/(b^5*d*Log[F]^5))
```

Rubi in Sympy [A] time = 5.80558, size = 27, normalized size = 0.93

$$-\frac{F^a\left(5,-\frac{b\log(F)}{c+dx}\right)}{b^5 d\log(F)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c)**6,x)
```

```
[Out] -F**a*Gamma(5, -b*log(F)/(c + d*x))/(b**5*d*log(F)**5)
```

Mathematica [B] time = 0.0681621, size = 92, normalized size = 3.17

$$-\frac{F^{a+\frac{b}{c+dx}}\left(b^4\log^4(F)-4b^3\log^3(F)(c+dx)+12b^2\log^2(F)(c+dx)^2-24b\log(F)(c+dx)^3+24(c+dx)^4\right)}{b^5 d\log^5(F)(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x)^6,x]
```

```
[Out] -((F^(a + b/(c + d*x))*(24*(c + d*x)^4 - 24*b*(c + d*x)^3*Log[F]
+ 12*b^2*(c + d*x)^2*Log[F]^2 - 4*b^3*(c + d*x)*Log[F]^3 + b^4*Lo
g[F]^4))/(b^5*d*(c + d*x)^4*Log[F]^5))
```

Maple [B] time = 0.069, size = 329, normalized size = 11.3

$$\frac{1}{(dx+c)^5}\left(-24\frac{d^4x^5}{(\ln(F))^5 b^5}e^{\left(a+\frac{b}{dx+c}\right)\ln(F)}-\frac{\left((\ln(F))^4 b^4-8(\ln(F))^3 b^3 c+36 b^2c^2(\ln(F))^2-96\ln(F)bc^3+120c^4\right)x}{(\ln(F))^5 b^5}e^{\left(a+\frac{b}{dx}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(d*x+c)^6,x)
```

```
[Out] (-24*d^4/ln(F)^5/b^5*x^5*exp((a+b/(d*x+c))*ln(F))-(ln(F)^4*b^4-8*
ln(F)^3*b^3*c+36*b^2*c^2*ln(F)^2-96*ln(F)*b*c^3+120*c^4)/ln(F)^5/
b^5*x*exp((a+b/(d*x+c))*ln(F))+4*d*(ln(F)^3*b^3-9*ln(F)^2*b^2*c+3
6*ln(F)*b*c^2-60*c^3)/ln(F)^5/b^5*x^2*exp((a+b/(d*x+c))*ln(F))-12
*d^2*(ln(F)^2*b^2-8*c*b*ln(F)+20*c^2)/ln(F)^5/b^5*x^3*exp((a+b/(d
*x+c))*ln(F))+24*d^3*(b*ln(F)-5*c)/ln(F)^5/b^5*x^4*exp((a+b/(d*x+
c))*ln(F))-(ln(F)^4*b^4-4*ln(F)^3*b^3*c+12*b^2*c^2*ln(F)^2-24*ln(
F)*b*c^3+24*c^4)*c/b^5/ln(F)^5/d*exp((a+b/(d*x+c))*ln(F)))/(d*x+c
)^5
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^6,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^6, x)
```

Fricas [A] time = 0.250094, size = 296, normalized size = 10.21

$$-\frac{\left(24\,d^4x^4 + b^4\log\left(F\right)^4 + 96\,cd^3x^3 + 144\,c^2d^2x^2 + 96\,c^3dx + 24\,c^4 - 4\,\left(b^3dx + b^3c\right)\log\left(F\right)^3 + 12\,\left(b^2d^2x^2 + 2\,b^2cdx + b^2c^2\right)\,l\ldots}{\left(b^5d^5x^4 + 4\,b^5cd^4x^3 + 6\,b^5c^2d^3x^2 + 4\,b^5c^3d^2x + b^5c^4d\right)\log\left(\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^6,x, algorithm="fricas")
```

```
[Out] -(24*d^4*x^4 + b^4*log(F)^4 + 96*c*d^3*x^3 + 144*c^2*d^2*x^2 + 96
*c^3*d*x + 24*c^4 - 4*(b^3*d*x + b^3*c)*log(F)^3 + 12*(b^2*d^2*x^
2 + 2*b^2*c*d*x + b^2*c^2)*log(F)^2 - 24*(b*d^3*x^3 + 3*b*c*d^2*x
^2 + 3*b*c^2*d*x + b*c^3)*log(F))*F^((a*d*x + a*c + b)/(d*x + c))
/((b^5*d^5*x^4 + 4*b^5*c*d^4*x^3 + 6*b^5*c^2*d^3*x^2 + 4*b^5*c^3*
d^2*x + b^5*c^4*d)*log(F)^5)
```

Sympy [A] time = 0.478147, size = 272, normalized size = 9.38

$$\frac{F^{a+\frac{b}{c+dx}}\left(-b^4\log\left(F\right)^4 + 4b^3c\log\left(F\right)^3 + 4b^3dx\log\left(F\right)^3 - 12b^2c^2\log\left(F\right)^2 - 24b^2cdx\log\left(F\right)^2 - 12b^2d^2x^2\log\left(F\right)^2 + 24bc^3\log\left(\ldots\right.\right.}{b^5c^4d\log\left(F\right)^5 + 4b^5c^3d^2x\log\left(F\right)^5 + 6b^5c^2d^3x^2\log\left(F\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(d*x+c)**6,x)
```

```
[Out] F**(a + b/(c + d*x))*(-b**4*log(F)**4 + 4*b**3*c*log(F)**3 + 4*b*
*3*d*x*log(F)**3 - 12*b**2*c**2*log(F)**2 - 24*b**2*c*d*x*log(F)*
*2 - 12*b**2*d**2*x**2*log(F)**2 + 24*b*c**3*log(F) + 72*b*c**2*d
*x*log(F) + 72*b*c*d**2*x**2*log(F) + 24*b*d**3*x**3*log(F) - 24*
c**4 - 96*c**3*d*x - 144*c**2*d**2*x**2 - 96*c*d**3*x**3 - 24*d**
```

```
4*x**4)/(b**5*c**4*d*log(F)**5 + 4*b**5*c**3*d**2*x*log(F)**5 + 6
*b**5*c**2*d**3*x**2*log(F)**5 + 4*b**5*c*d**4*x**3*log(F)**5 + b
**5*d**5*x**4*log(F)**5)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^6,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^6, x)
```

3.313 $\int \frac{F^{a+\frac{b}{c+dx}}}{(c+dx)^7}\,dx$

Optimal. Leaf size=28

$$\frac{F^a\text{Gamma}\left(6,-\frac{b\log(F)}{c+dx}\right)}{b^6d\log^6(F)}$$

```
[Out] (F^a*Gamma[6, -((b*Log[F])/(c + d*x))])/(b^6*d*Log[F]^6)
```

Rubi [A] time = 0.0703412, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(6,-\frac{b\log(F)}{c+dx}\right)}{b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(c + d*x)^7,x]

[Out] (F^a*Gamma[6, -((b*Log[F])/(c + d*x))])/(b^6*d*Log[F]^6)
```

Rubi in Sympy [A] time = 5.79803, size = 26, normalized size = 0.93

$$\frac{F^a\left(6,-\frac{b\log(F)}{c+dx}\right)}{b^6d\log(F)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(d*x+c)**7,x)

[Out] F**a*Gamma(6, -b*log(F)/(c + d*x))/(b**6*d*log(F)**6)
```

Mathematica [B] time = 0.0680053, size = 102, normalized size = 3.64

$$\frac{F^{a+\frac{b}{c+dx}}\left(-\frac{b^5\log^5(F)}{(c+dx)^5}+\frac{5b^4\log^4(F)}{(c+dx)^4}-\frac{20b^3\log^3(F)}{(c+dx)^3}+\frac{60b^2\log^2(F)}{(c+dx)^2}-\frac{120b\log(F)}{c+dx}+120\right)}{b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(c + d*x)^7,x]

[Out] (F^(a + b/(c + d*x))*(120 - (120*b*Log[F])/(c + d*x) + (60*b^2*Lo
g[F]^2)/(c + d*x)^2 - (20*b^3*Log[F]^3)/(c + d*x)^3 + (5*b^4*Log[
F]^4)/(c + d*x)^4 - (b^5*Log[F]^5)/(c + d*x)^5))/(b^6*d*Log[F]^6)
```

Maple [B] time = 0.083, size = 427, normalized size = 15.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b/(d*x+c))/(d*x+c)^7,x)
```

```
[Out] (120*d^5/ln(F)^6/b^6*x^6*exp((a+b/(d*x+c))*ln(F))-(ln(F)^5*b^5-10
*ln(F)^4*b^4*c+60*ln(F)^3*b^3*c^2-240*ln(F)^2*b^2*c^3+600*ln(F)*b
*c^4-720*c^5)/ln(F)^6/b^6*x*exp((a+b/(d*x+c))*ln(F))+5*d*(ln(F)^4
*b^4-12*ln(F)^3*b^3*c+72*b^2*c^2*ln(F)^2-240*ln(F)*b*c^3+360*c^4)
/b^6/ln(F)^6*x^2*exp((a+b/(d*x+c))*ln(F))-20*d^2*(ln(F)^3*b^3-12*
ln(F)^2*b^2*c+60*ln(F)*b*c^2-120*c^3)/ln(F)^6/b^6*x^3*exp((a+b/(d
*x+c))*ln(F))+60*d^3*(ln(F)^2*b^2-10*c*b*ln(F)+30*c^2)/ln(F)^6/b^
6*x^4*exp((a+b/(d*x+c))*ln(F))-120*d^4*(b*ln(F)-6*c)/ln(F)^6/b^6*
x^5*exp((a+b/(d*x+c))*ln(F))-(ln(F)^5*b^5-5*ln(F)^4*b^4*c+20*ln(F
)^3*b^3*c^2-60*ln(F)^2*b^2*c^3+120*ln(F)*b*c^4-120*c^5)*c/b^6/ln(
F)^6/d*exp((a+b/(d*x+c))*ln(F)))/(d*x+c)^6
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c))/(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^7, x)
```

Fricas [A] time = 0.259084, size = 408, normalized size = 14.57

$$\frac{\left(120\,d^5x^5 - b^5\log\left(F\right)^5 + 600\,cd^4x^4 + 1200\,c^2d^3x^3 + 1200\,c^3d^2x^2 + 600\,c^4dx + 120\,c^5 + 5\,\left(b^4dx + b^4c\right)\log\left(F\right)^4 - 20\,\left(b^3d^2x^2\right.\right.}{\left(b^6d^6x^5 + 5\,b^6cd^5x^4 + 10\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c))/(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] (120*d^5*x^5 - b^5*log(F)^5 + 600*c*d^4*x^4 + 1200*c^2*d^3*x^3 +
1200*c^3*d^2*x^2 + 600*c^4*d*x + 120*c^5 + 5*(b^4*d*x + b^4*c)*lo
g(F)^4 - 20*(b^3*d^2*x^2 + 2*b^3*c*d*x + b^3*c^2)*log(F)^3 + 60*(
b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*log(F)^2
 - 120*(b*d^4*x^4 + 4*b*c*d^3*x^3 + 6*b*c^2*d^2*x^2 + 4*b*c^3*d*x
 + b*c^4)*log(F))*F^((a*d*x + a*c + b)/(d*x + c))/((b^6*d^6*x^5 +
 5*b^6*c*d^5*x^4 + 10*b^6*c^2*d^4*x^3 + 10*b^6*c^3*d^3*x^2 + 5*b^
6*c^4*d^2*x + b^6*c^5*d)*log(F)^6)
```

Sympy [A] time = 0.546685, size = 388, normalized size = 13.86

$$\frac{F^{a+\frac{b}{c+dx}}\left(-b^5\log\left(F\right)^5 + 5b^4c\log\left(F\right)^4 + 5b^4dx\log\left(F\right)^4 - 20b^3c^2\log\left(F\right)^3 - 40b^3cdx\log\left(F\right)^3 - 20b^3d^2x^2\log\left(F\right)^3 + 60b^2c^3\log\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**(a+b/(d*x+c))/(d*x+c)**7,x)
```

```
[Out] F**(a + b/(c + d*x))*(-b**5*log(F)**5 + 5*b**4*c*log(F)**4 + 5*b*
*4*d*x*log(F)**4 - 20*b**3*c**2*log(F)**3 - 40*b**3*c*d*x*log(F)*
```

```
*3 - 20*b**3*d**2*x**2*log(F)**3 + 60*b**2*c**3*log(F)**2 + 180*b
**2*c**2*d*x*log(F)**2 + 180*b**2*c*d**2*x**2*log(F)**2 + 60*b**2
*d**3*x**3*log(F)**2 - 120*b*c**4*log(F) - 480*b*c**3*d*x*log(F)
- 720*b*c**2*d**2*x**2*log(F) - 480*b*c*d**3*x**3*log(F) - 120*b*
d**4*x**4*log(F) + 120*c**5 + 600*c**4*d*x + 1200*c**3*d**2*x**2
+ 1200*c**2*d**3*x**3 + 600*c*d**4*x**4 + 120*d**5*x**5)/(b**6*c*
*5*d*log(F)**6 + 5*b**6*c**4*d**2*x*log(F)**6 + 10*b**6*c**3*d**3
*x**2*log(F)**6 + 10*b**6*c**2*d**4*x**3*log(F)**6 + 5*b**6*c*d**
5*x**4*log(F)**6 + b**6*d**6*x**5*log(F)**6)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(d*x + c)^7,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(d*x + c)^7, x)
```

3.314 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^m\,dx$

Optimal. Leaf size=61

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{m+1}{2}}\text{Gamma}\left(\frac{1}{2}(-m-1),-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[(-1 - m)/2, -((b*Log[F])/(c + d*x)^2
)]*(-((b*Log[F])/(c + d*x)^2))^((1 + m)/2))/(2*d)
```

Rubi [A] time = 0.0751403, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{m+1}{2}}\text{Gamma}\left(\frac{1}{2}(-m-1),-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^m,x]
```

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[(-1 - m)/2, -((b*Log[F])/(c + d*x)^2
)]*(-((b*Log[F])/(c + d*x)^2))^((1 + m)/2))/(2*d)
```

Rubi in Sympy [A] time = 6.0649, size = 56, normalized size = 0.92

$$\frac{F^a\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{m}{2}+\frac{1}{2}}(c+dx)^{m+1}\left(-\frac{m}{2}-\frac{1}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**m,x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**2)**(m/2 + 1/2)*(c + d*x)**(m + 1)*Gam
ma(-m/2 - 1/2, -b*log(F)/(c + d*x)**2)/(2*d)
```

Mathematica [A] time = 0.0623221, size = 61, normalized size = 1.

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{m+1}{2}}\text{Gamma}\left(\frac{1}{2}(-m-1),-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^m,x]
```

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[(-1 - m)/2, -((b*Log[F])/(c + d*x)^2
)]*(-((b*Log[F])/(c + d*x)^2))^((1 + m)/2))/(2*d)
```

Maple [F] time = 0.098, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^2}}(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^m,x)
```

```
[Out] int(F^(a+b/(d*x+c)^2)*(d*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*F^(a + b/(d*x + c)^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((dx+c)^m F^{\frac{ad^2x^2+2\,acdx+ac^2+b}{d^2x^2+2\,cdx+c^2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*
x^2 + 2*c*d*x + c^2)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*F^(a + b/(d*x + c)^2), x)
```

3.315 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^9\,dx$

Optimal. Leaf size=31

$$-\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] -(b^5*F^a*Gamma[-5, -((b*Log[F])/(c + d*x)^2)]*Log[F]^5)/(2*d)
```

Rubi [A] time = 0.0754626, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^9,x]

[Out] -(b^5*F^a*Gamma[-5, -((b*Log[F])/(c + d*x)^2)]*Log[F]^5)/(2*d)
```

Rubi in Sympy [A] time = 6.35865, size = 32, normalized size = 1.03

$$-\frac{F^ab^5\left(-5,-\frac{b\log(F)}{(c+dx)^2}\right)\log(F)^5}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**9,x)

[Out] -F**a*b**5*Gamma(-5, -b*log(F)/(c + d*x)**2)*log(F)**5/(2*d)
```

Mathematica [B] time = 0.12449, size = 112, normalized size = 3.61

$$\frac{F^a\left((c+dx)^2F^{\frac{b}{(c+dx)^2}}\left(b^4\log^4(F)+b^3\log^3(F)(c+dx)^2+2b^2\log^2(F)(c+dx)^4+6b\log(F)(c+dx)^6+24(c+dx)^8\right)-b^5\log^5(F\right.}{240d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^9,x]

[Out] (F^a*(-(b^5*ExpIntegralEi[(b*Log[F])/(c + d*x)^2]*Log[F]^5) + F^(
b/(c + d*x)^2)*(c + d*x)^2*(24*(c + d*x)^8 + 6*b*(c + d*x)^6*Log[
F] + 2*b^2*(c + d*x)^4*Log[F]^2 + b^3*(c + d*x)^2*Log[F]^3 + b^4*
Log[F]^4)))/(240*d)
```

Maple [B] time = 0.09, size = 961, normalized size = 31.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b/(d*x+c)^2)*(d*x+c)^9,x)
```

```
[Out] 1/10*F^a/d*F^(b/(d*x+c)^2)*c^10+1/10*F^a*d^9*F^(b/(d*x+c)^2)*x^10
+F^a*F^(b/(d*x+c)^2)*c^9*x+1/6*F^a*d^2*b^2*ln(F)^2*F^(b/(d*x+c)^2
)*c^3*x^3+1/8*F^a*d*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^4*x^2+1/60*F^a*
d^2*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c*x^3+1/40*F^a*d*b^3*ln(F)^3*F^(b
/(d*x+c)^2)*c^2*x^2+1/5*F^a*d^6*b*ln(F)*F^(b/(d*x+c)^2)*c*x^7+7/1
0*F^a*d^5*b*ln(F)*F^(b/(d*x+c)^2)*c^2*x^6+7/5*F^a*d^4*b*ln(F)*F^(
b/(d*x+c)^2)*c^3*x^5+7/4*F^a*d^3*b*ln(F)*F^(b/(d*x+c)^2)*c^4*x^4+
7/5*F^a*d^2*b*ln(F)*F^(b/(d*x+c)^2)*c^5*x^3+7/10*F^a*d*b*ln(F)*F^
(b/(d*x+c)^2)*c^6*x^2+1/20*F^a*d^4*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c*
x^5+1/8*F^a*d^3*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^2*x^4+F^a*d^8*F^(b/
(d*x+c)^2)*c*x^9+9/2*F^a*d^7*F^(b/(d*x+c)^2)*c^2*x^8+12*F^a*d^6*F
^(b/(d*x+c)^2)*c^3*x^7+21*F^a*d^5*F^(b/(d*x+c)^2)*c^4*x^6+126/5*F
^a*d^4*F^(b/(d*x+c)^2)*c^5*x^5+21*F^a*d^3*F^(b/(d*x+c)^2)*c^6*x^4
+12*F^a*d^2*F^(b/(d*x+c)^2)*c^7*x^3+9/2*F^a*d*F^(b/(d*x+c)^2)*c^8
*x^2+1/240*F^a/d*b^5*ln(F)^5*Ei(1,-b*ln(F)/(d*x+c)^2)+1/20*F^a*b^
2*ln(F)^2*F^(b/(d*x+c)^2)*c^5*x+1/60*F^a*b^3*ln(F)^3*F^(b/(d*x+c)
^2)*c^3*x+1/120*F^a*b^4*ln(F)^4*F^(b/(d*x+c)^2)*c*x+1/5*F^a*b*ln(
F)*F^(b/(d*x+c)^2)*c^7*x+1/240*F^a/d*b^4*ln(F)^4*F^(b/(d*x+c)^2)*
c^2+1/40*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c^8+1/120*F^a/d*b^2*ln(F)^
2*F^(b/(d*x+c)^2)*c^6+1/120*F^a*d^5*b^2*ln(F)^2*F^(b/(d*x+c)^2)*x
^6+1/240*F^a*d^3*b^3*ln(F)^3*F^(b/(d*x+c)^2)*x^4+1/240*F^a*d*b^4*
ln(F)^4*F^(b/(d*x+c)^2)*x^2+1/40*F^a*d^7*b*ln(F)*F^(b/(d*x+c)^2)*
x^8+1/240*F^a/d*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{240}\left(24\,F^a d^9 x^{10} + 240\,F^a c d^8 x^9 + 6\left(180\,F^a c^2 d^7 + F^a b d^7 \log(F)\right)x^8 + 48\left(60\,F^a c^3 d^6 + F^a b c d^6 \log(F)\right)x^7 + 2\left(2520\,F^a c^4 d^5 + \right.\right.$$
$$+\int \frac{\left(F^a b^5 d^2 x^2 \log(F)^5 + 2\,F^a b^5 c d x \log(F)^5 - 24\,F^a b c^{10} \log(F) - 6\,F^a b^2 c^8 \log(F)^2 - 2\,F^a b^3 c^6 \log(F)^3 - F^a b^4 c^4 \log(F)^4\right) F^{\frac{b}{d^2x^2+2cdx+c^2}}}{120\left(d^3x^3 + 3\,cd^2x^2 + 3\,c^2dx + c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((d*x + c)^9*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/240*(24*F^a*d^9*x^10 + 240*F^a*c*d^8*x^9 + 6*(180*F^a*c^2*d^7 +
 F^a*b*d^7*log(F))*x^8 + 48*(60*F^a*c^3*d^6 + F^a*b*c*d^6*log(F))
*x^7 + 2*(2520*F^a*c^4*d^5 + 84*F^a*b*c^2*d^5*log(F) + F^a*b^2*d^
5*log(F)^2)*x^6 + 12*(504*F^a*c^5*d^4 + 28*F^a*b*c^3*d^4*log(F) +
 F^a*b^2*c*d^4*log(F)^2)*x^5 + (5040*F^a*c^6*d^3 + 420*F^a*b*c^4*
d^3*log(F) + 30*F^a*b^2*c^2*d^3*log(F)^2 + F^a*b^3*d^3*log(F)^3)*
x^4 + 4*(720*F^a*c^7*d^2 + 84*F^a*b*c^5*d^2*log(F) + 10*F^a*b^2*c
^3*d^2*log(F)^2 + F^a*b^3*c*d^2*log(F)^3)*x^3 + (1080*F^a*c^8*d +
 168*F^a*b*c^6*d*log(F) + 30*F^a*b^2*c^4*d*log(F)^2 + 6*F^a*b^3*c
^2*d*log(F)^3 + F^a*b^4*d*log(F)^4)*x^2 + 2*(120*F^a*c^9 + 24*F^a
*b*c^7*log(F) + 6*F^a*b^2*c^5*log(F)^2 + 2*F^a*b^3*c^3*log(F)^3 +
 F^a*b^4*c*log(F)^4)*x)*F^(b/(d^2*x^2 + 2*c*d*x + c^2)) + integra
te(1/120*(F^a*b^5*d^2*x^2*log(F)^5 + 2*F^a*b^5*c*d*x*log(F)^5 - 2
4*F^a*b*c^10*log(F) - 6*F^a*b^2*c^8*log(F)^2 - 2*F^a*b^3*c^6*log(
F)^3 - F^a*b^4*c^4*log(F)^4)*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(d^3
*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.260159, size = 628, normalized size = 20.26

$$-\frac{F^a b^5 \mathrm{Ei}\left(\frac{b\log(F)}{d^2x^2+2\,cdx+c^2}\right)\log(F)^5 - \left(24\,d^{10}x^{10} + 240\,cd^9x^9 + 1080\,c^2d^8x^8 + 2880\,c^3d^7x^7 + 5040\,c^4d^6x^6 + 6048\,c^5d^5x^5 + 5040\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^9*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/240*(F^a*b^5*Ei(b*log(F)/(d^2*x^2 + 2*c*d*x + c^2))*log(F)^5 -
 (24*d^10*x^10 + 240*c*d^9*x^9 + 1080*c^2*d^8*x^8 + 2880*c^3*d^7*
x^7 + 5040*c^4*d^6*x^6 + 6048*c^5*d^5*x^5 + 5040*c^6*d^4*x^4 + 28
80*c^7*d^3*x^3 + 1080*c^8*d^2*x^2 + 240*c^9*d*x + 24*c^10 + (b^4*
d^2*x^2 + 2*b^4*c*d*x + b^4*c^2)*log(F)^4 + (b^3*d^4*x^4 + 4*b^3*
c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4*b^3*c^3*d*x + b^3*c^4)*log(F)^3
 + 2*(b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2
*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*log(
F)^2 + 6*(b*d^8*x^8 + 8*b*c*d^7*x^7 + 28*b*c^2*d^6*x^6 + 56*b*c^3
*d^5*x^5 + 70*b*c^4*d^4*x^4 + 56*b*c^5*d^3*x^3 + 28*b*c^6*d^2*x^2
 + 8*b*c^7*d*x + b*c^8)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2
 + b)/(d^2*x^2 + 2*c*d*x + c^2)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**9,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^9 F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^9*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^9*F^(a + b/(d*x + c)^2), x)
```

3.316 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^7\,dx$

Optimal. Leaf size=31

$$\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] (b^4*F^a*Gamma[-4, -((b*Log[F])/(c + d*x)^2)]*Log[F]^4)/(2*d)
```

Rubi [A] time = 0.0744386, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^7,x]
```

```
[Out] (b^4*F^a*Gamma[-4, -((b*Log[F])/(c + d*x)^2)]*Log[F]^4)/(2*d)
```

Rubi in Sympy [A] time = 6.24837, size = 31, normalized size = 1.

$$\frac{F^ab^4\left(-4,-\frac{b\log(F)}{(c+dx)^2}\right)\log(F)^4}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**7,x)
```

```
[Out] F**a*b**4*Gamma(-4, -b*log(F)/(c + d*x)**2)*log(F)**4/(2*d)
```

Mathematica [B] time = 0.147699, size = 96, normalized size = 3.1

$$\frac{F^a\left((c+dx)^2F^{\frac{b}{(c+dx)^2}}\left(b^3\log^3(F)+b^2\log^2(F)(c+dx)^2+2b\log(F)(c+dx)^4+6(c+dx)^6\right)-b^4\log^4(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)\right.}{48d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^7,x]
```

```
[Out] (F^a*(-(b^4*ExpIntegralEi[(b*Log[F])/(c + d*x)^2]*Log[F]^4) + F^(
b/(c + d*x)^2)*(c + d*x)^2*(6*(c + d*x)^6 + 2*b*(c + d*x)^4*Log[F
] + b^2*(c + d*x)^2*Log[F]^2 + b^3*Log[F]^3)))/(48*d)
```

Maple [B] time = 0.066, size = 646, normalized size = 20.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^7,x)
```

```
[Out] 1/8*F^a*d^7*F^(b/(d*x+c)^2)*x^8+F^a*F^(b/(d*x+c)^2)*c^7*x+1/8*F^a
/d*F^(b/(d*x+c)^2)*c^8+1/12*F^a*d^2*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c
*x^3+1/8*F^a*d*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^2*x^2+1/4*F^a*d^4*b*
ln(F)*F^(b/(d*x+c)^2)*c*x^5+5/8*F^a*d^3*b*ln(F)*F^(b/(d*x+c)^2)*c
^2*x^4+5/6*F^a*d^2*b*ln(F)*F^(b/(d*x+c)^2)*c^3*x^3+5/8*F^a*d*b*ln
(F)*F^(b/(d*x+c)^2)*c^4*x^2+1/4*F^a*b*ln(F)*F^(b/(d*x+c)^2)*c^5*x
+1/12*F^a*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^3*x+1/24*F^a*b^3*ln(F)^3*
F^(b/(d*x+c)^2)*c*x+1/24*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c^6+1/48*F
^a/d*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^4+1/48*F^a/d*b^3*ln(F)^3*F^(b/
(d*x+c)^2)*c^2+1/24*F^a*d^5*b*ln(F)*F^(b/(d*x+c)^2)*x^6+1/48*F^a*
d^3*b^2*ln(F)^2*F^(b/(d*x+c)^2)*x^4+1/48*F^a*d*b^3*ln(F)^3*F^(b/(
d*x+c)^2)*x^2+F^a*d^6*F^(b/(d*x+c)^2)*c*x^7+7/2*F^a*d^5*F^(b/(d*x
+c)^2)*c^2*x^6+7*F^a*d^4*F^(b/(d*x+c)^2)*c^3*x^5+35/4*F^a*d^3*F^(
b/(d*x+c)^2)*c^4*x^4+7*F^a*d^2*F^(b/(d*x+c)^2)*c^5*x^3+7/2*F^a*d*
F^(b/(d*x+c)^2)*c^6*x^2+1/48*F^a/d*b^4*ln(F)^4*Ei(1,-b*ln(F)/(d*x
+c)^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{48}\left(6\,F^{a}d^{7}x^{8}+48\,F^{a}cd^{6}x^{7}+2\,\left(84\,F^{a}c^{2}d^{5}+F^{a}bd^{5}\log\left(F\right)\right)x^{6}+12\,\left(28\,F^{a}c^{3}d^{4}+F^{a}bcd^{4}\log\left(F\right)\right)x^{5}+\left(420\,F^{a}c^{4}d^{3}+30\,F^{a}bc\right.\right.$$

$$+\int\frac{\left(F^{a}b^{4}d^{2}x^{2}\log\left(F\right)^{4}+2\,F^{a}b^{4}cdx\log\left(F\right)^{4}-6\,F^{a}bc^{8}\log\left(F\right)-2\,F^{a}b^{2}c^{6}\log\left(F\right)^{2}-F^{a}b^{3}c^{4}\log\left(F\right)^{3}\right)F^{\frac{b}{d^{2}x^{2}+2\,cdx+c^{2}}}}{24\,\left(d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/48*(6*F^a*d^7*x^8 + 48*F^a*c*d^6*x^7 + 2*(84*F^a*c^2*d^5 + F^a*
b*d^5*log(F))*x^6 + 12*(28*F^a*c^3*d^4 + F^a*b*c*d^4*log(F))*x^5
+ (420*F^a*c^4*d^3 + 30*F^a*b*c^2*d^3*log(F) + F^a*b^2*d^3*log(F)
^2)*x^4 + 4*(84*F^a*c^5*d^2 + 10*F^a*b*c^3*d^2*log(F) + F^a*b^2*c
*d^2*log(F)^2)*x^3 + (168*F^a*c^6*d + 30*F^a*b*c^4*d*log(F) + 6*F
^a*b^2*c^2*d*log(F)^2 + F^a*b^3*d*log(F)^3)*x^2 + 2*(24*F^a*c^7 +
 6*F^a*b*c^5*log(F) + 2*F^a*b^2*c^3*log(F)^2 + F^a*b^3*c*log(F)^3
)*x)*F^(b/(d^2*x^2 + 2*c*d*x + c^2)) + integrate(1/24*(F^a*b^4*d^
2*x^2*log(F)^4 + 2*F^a*b^4*c*d*x*log(F)^4 - 6*F^a*b*c^8*log(F) -
2*F^a*b^2*c^6*log(F)^2 - F^a*b^3*c^4*log(F)^3)*F^(b/(d^2*x^2 + 2*
c*d*x + c^2))/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.264485, size = 447, normalized size = 14.42

$$-\frac{F^{a}b^{4}\mathrm{Ei}\left(\frac{b\log(F)}{d^{2}x^{2}+2\,cdx+c^{2}}\right)\log\left(F\right)^{4}-\left(6\,d^{8}x^{8}+48\,cd^{7}x^{7}+168\,c^{2}d^{6}x^{6}+336\,c^{3}d^{5}x^{5}+420\,c^{4}d^{4}x^{4}+336\,c^{5}d^{3}x^{3}+168\,c^{6}d^{2}x^{2}+\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/48*(F^a*b^4*Ei(b*log(F)/(d^2*x^2 + 2*c*d*x + c^2))*log(F)^4 -
(6*d^8*x^8 + 48*c*d^7*x^7 + 168*c^2*d^6*x^6 + 336*c^3*d^5*x^5 + 4
20*c^4*d^4*x^4 + 336*c^5*d^3*x^3 + 168*c^6*d^2*x^2 + 48*c^7*d*x +
 6*c^8 + (b^3*d^2*x^2 + 2*b^3*c*d*x + b^3*c^2)*log(F)^3 + (b^2*d^
4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2
*c^4)*log(F)^2 + 2*(b*d^6*x^6 + 6*b*c*d^5*x^5 + 15*b*c^2*d^4*x^4
+ 20*b*c^3*d^3*x^3 + 15*b*c^4*d^2*x^2 + 6*b*c^5*d*x + b*c^6)*log(
F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c
^2)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**7,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^7 F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7*F^(a + b/(d*x + c)^2),x, algorithm="giac")

[Out] integrate((d*x + c)^7*F^(a + b/(d*x + c)^2), x)
```

3.317 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^5\,dx$

Optimal. Leaf size=121

$$-\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{12d}+\frac{b^2\log^2(F)(c+dx)^2F^{a+\frac{b}{(c+dx)^2}}}{12d}+\frac{(c+dx)^6F^{a+\frac{b}{(c+dx)^2}}}{6d}+\frac{b\log(F)(c+dx)^4F^{a+\frac{b}{(c+dx)^2}}}{12d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^6)/(6*d) + (b*F^(a + b/(c + d*x)
^2)*(c + d*x)^4*Log[F])/(12*d) + (b^2*F^(a + b/(c + d*x)^2)*(c +
d*x)^2*Log[F]^2)/(12*d) - (b^3*F^a*ExpIntegralEi[(b*Log[F])/(c +
d*x)^2]*Log[F]^3)/(12*d)
```

Rubi [A] time = 0.280958, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$-\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{12d}+\frac{b^2\log^2(F)(c+dx)^2F^{a+\frac{b}{(c+dx)^2}}}{12d}+\frac{(c+dx)^6F^{a+\frac{b}{(c+dx)^2}}}{6d}+\frac{b\log(F)(c+dx)^4F^{a+\frac{b}{(c+dx)^2}}}{12d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^5,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^6)/(6*d) + (b*F^(a + b/(c + d*x)
^2)*(c + d*x)^4*Log[F])/(12*d) + (b^2*F^(a + b/(c + d*x)^2)*(c +
d*x)^2*Log[F]^2)/(12*d) - (b^3*F^a*ExpIntegralEi[(b*Log[F])/(c +
d*x)^2]*Log[F]^3)/(12*d)
```

Rubi in Sympy [A] time = 22.0565, size = 107, normalized size = 0.88

$$-\frac{F^ab^3\log(F)^3\operatorname{Ei}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{12d}+\frac{F^{a+\frac{b}{(c+dx)^2}}b^2(c+dx)^2\log(F)^2}{12d}+\frac{F^{a+\frac{b}{(c+dx)^2}}b(c+dx)^4\log(F)}{12d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)^6}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**5,x)
```

```
[Out] -F**a*b**3*log(F)**3*Ei(b*log(F)/(c + d*x)**2)/(12*d) + F**(a + b
/(c + d*x)**2)*b**2*(c + d*x)**2*log(F)**2/(12*d) + F**(a + b/(c
+ d*x)**2)*b*(c + d*x)**4*log(F)/(12*d) + F**(a + b/(c + d*x)**2)
*(c + d*x)**6/(6*d)
```

Mathematica [A] time = 0.126527, size = 80, normalized size = 0.66

$$\frac{F^a\left((c+dx)^2F^{\frac{b}{(c+dx)^2}}\left(b^2\log^2(F)+b\log(F)(c+dx)^2+2(c+dx)^4\right)-b^3\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)\right)}{12d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^5,x]
```

```
[Out] (F^a*(-(b^3*ExpIntegralEi[(b*Log[F])/(c + d*x)^2]*Log[F]^3) + F^(
b/(c + d*x)^2)*(c + d*x)^2*(2*(c + d*x)^4 + b*(c + d*x)^2*Log[F]
+ b^2*Log[F]^2)))/(12*d)
```

Maple [B] time = 0.055, size = 395, normalized size = 3.3

$$\frac{F^a d^5 x^6}{6}F^{\frac{b}{(dx+c)^2}} + F^a d^4 F^{\frac{b}{(dx+c)^2}} c x^5 + \frac{5\,F^a d^3 c^2 x^4}{2}F^{\frac{b}{(dx+c)^2}} + \frac{10\,F^a d^2 c^3 x^3}{3}F^{\frac{b}{(dx+c)^2}} + \frac{5\,F^a d c^4 x^2}{2}F^{\frac{b}{(dx+c)^2}} + F^a F^{\frac{b}{(dx+c)^2}} c^5 x + \frac{F^a c^6}{6\,d}F^{\frac{b}{(dx+c)^2}} + \frac{F^a d^3 b \ln(F)\, x^4}{12}F^{\frac{b}{(dx+c)^2}} + \frac{F^a d^2 b \ln(F)\, c x^3}{3}F^{\frac{b}{(dx+c)^2}} + \frac{F^a d b \ln(F)\, c^2 x^2}{2}F^{\frac{b}{(dx+c)^2}} + \frac{F^a b \ln(F)\, c^3 x}{3}F^{\frac{b}{(dx+c)^2}} + \frac{F^a b \ln(F)\, c^4}{12\,d}F^{\frac{b}{(dx+c)^2}} + \frac{F^a d b^2 (\ln(F))^2 x^2}{12}F^{\frac{b}{(dx+c)^2}} + \frac{F^a b^2 (\ln(F))^2 c x}{6}F^{\frac{b}{(dx+c)^2}} + \frac{F^a b^2 (\ln(F))^2 c^2}{12\,d}F^{\frac{b}{(dx+c)^2}} + \frac{F^a b^3 (\ln(F))^3}{12\,d} Ei\left(1, -\frac{b\ln(F)}{(dx+c)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^5,x)
```

```
[Out] 1/6*F^a*d^5*F^(b/(d*x+c)^2)*x^6+F^a*d^4*F^(b/(d*x+c)^2)*c*x^5+5/2
*F^a*d^3*F^(b/(d*x+c)^2)*c^2*x^4+10/3*F^a*d^2*F^(b/(d*x+c)^2)*c^3
*x^3+5/2*F^a*d*F^(b/(d*x+c)^2)*c^4*x^2+F^a*F^(b/(d*x+c)^2)*c^5*x+
1/6*F^a/d*F^(b/(d*x+c)^2)*c^6+1/12*F^a*d^3*b*ln(F)*F^(b/(d*x+c)^2
)*x^4+1/3*F^a*d^2*b*ln(F)*F^(b/(d*x+c)^2)*c*x^3+1/2*F^a*d*b*ln(F)
*F^(b/(d*x+c)^2)*c^2*x^2+1/3*F^a*b*ln(F)*F^(b/(d*x+c)^2)*c^3*x+1/
12*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c^4+1/12*F^a*d*b^2*ln(F)^2*F^(b/
(d*x+c)^2)*x^2+1/6*F^a*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c*x+1/12*F^a/d
*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^2+1/12*F^a/d*b^3*ln(F)^3*Ei(1,-b*l
n(F)/(d*x+c)^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{12}\left(2\,F^a d^5 x^6 + 12\,F^a c d^4 x^5 + \left(30\,F^a c^2 d^3 + F^a b d^3 \log(F)\right)x^4 + 4\left(10\,F^a c^3 d^2 + F^a b c d^2 \log(F)\right)x^3 + \left(30\,F^a c^4 d + 6\,F^a b c^2 d \log\right.\right. + \int \frac{\left(F^a b^3 d^2 x^2 \log(F)^3 + 2\,F^a b^3 c d x \log(F)^3 - 2\,F^a b c^6 \log(F) - F^a b^2 c^4 \log(F)^2\right) F^{\frac{b}{d^2x^2+2\,cdx+c^2}}}{6\left(d^3x^3 + 3\,cd^2x^2 + 3\,c^2dx + c^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/12*(2*F^a*d^5*x^6 + 12*F^a*c*d^4*x^5 + (30*F^a*c^2*d^3 + F^a*b*
d^3*log(F))*x^4 + 4*(10*F^a*c^3*d^2 + F^a*b*c*d^2*log(F))*x^3 + (
30*F^a*c^4*d + 6*F^a*b*c^2*d*log(F) + F^a*b^2*d*log(F)^2)*x^2 + 2
*(6*F^a*c^5 + 2*F^a*b*c^3*log(F) + F^a*b^2*c*log(F)^2)*x)*F^(b/(d
^2*x^2 + 2*c*d*x + c^2)) + integrate(1/6*(F^a*b^3*d^2*x^2*log(F)^
3 + 2*F^a*b^3*c*d*x*log(F)^3 - 2*F^a*b*c^6*log(F) - F^a*b^2*c^4*l
og(F)^2)*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(d^3*x^3 + 3*c*d^2*x^2 +
 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.258862, size = 304, normalized size = 2.51

$$-\frac{F^{a}b^{3}\mathrm{Ei}\left(\frac{b\log(F)}{d^{2}x^{2}+2\,cdx+c^{2}}\right)\log\left(F\right)^{3}-\left(2\,d^{6}x^{6}+12\,cd^{5}x^{5}+30\,c^{2}d^{4}x^{4}+40\,c^{3}d^{3}x^{3}+30\,c^{4}d^{2}x^{2}+12\,c^{5}dx+2\,c^{6}+\left(b^{2}d^{2}x^{2}+2\,b^{2}\right.\right.}{12\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/12*(F^a*b^3*Ei(b*log(F)/(d^2*x^2 + 2*c*d*x + c^2))*log(F)^3 -
(2*d^6*x^6 + 12*c*d^5*x^5 + 30*c^2*d^4*x^4 + 40*c^3*d^3*x^3 + 30*
c^4*d^2*x^2 + 12*c^5*d*x + 2*c^6 + (b^2*d^2*x^2 + 2*b^2*c*d*x + b
^2*c^2)*log(F)^2 + (b*d^4*x^4 + 4*b*c*d^3*x^3 + 6*b*c^2*d^2*x^2 +
 4*b*c^3*d*x + b*c^4)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 +
 b)/(d^2*x^2 + 2*c*d*x + c^2)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{5}F^{a+\frac{b}{(dx+c)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^5*F^(a + b/(d*x + c)^2), x)
```

3.318 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^3\,dx$

Optimal. Leaf size=87

$$-\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{4d}+\frac{(c+dx)^4F^{a+\frac{b}{(c+dx)^2}}}{4d}+\frac{b\log(F)(c+dx)^2F^{a+\frac{b}{(c+dx)^2}}}{4d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^4)/(4*d) + (b*F^(a + b/(c + d*x)
^2)*(c + d*x)^2*Log[F])/(4*d) - (b^2*F^a*ExpIntegralEi[(b*Log[F])
/(c + d*x)^2]*Log[F]^2)/(4*d)
```

Rubi [A] time = 0.195469, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{4d}+\frac{(c+dx)^4F^{a+\frac{b}{(c+dx)^2}}}{4d}+\frac{b\log(F)(c+dx)^2F^{a+\frac{b}{(c+dx)^2}}}{4d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^3,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^4)/(4*d) + (b*F^(a + b/(c + d*x)
^2)*(c + d*x)^2*Log[F])/(4*d) - (b^2*F^a*ExpIntegralEi[(b*Log[F])
/(c + d*x)^2]*Log[F]^2)/(4*d)
```

Rubi in Sympy [A] time = 14.1075, size = 76, normalized size = 0.87

$$-\frac{F^ab^2\log(F)^2\operatorname{Ei}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{4d}+\frac{F^{a+\frac{b}{(c+dx)^2}}b(c+dx)^2\log(F)}{4d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)^4}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**3,x)
```

```
[Out] -F**a*b**2*log(F)**2*Ei(b*log(F)/(c + d*x)**2)/(4*d) + F**(a + b/
(c + d*x)**2)*b*(c + d*x)**2*log(F)/(4*d) + F**(a + b/(c + d*x)**
2)*(c + d*x)**4/(4*d)
```

Mathematica [A] time = 0.0872725, size = 63, normalized size = 0.72

$$\frac{F^a\left((c+dx)^2F^{\frac{b}{(c+dx)^2}}\left(b\log(F)+(c+dx)^2\right)-b^2\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^3,x]
```

```
[Out] (F^a*(-(b^2*ExpIntegralEi[(b*Log[F])/(c + d*x)^2]*Log[F]^2) + F^(
b/(c + d*x)^2)*(c + d*x)^2*((c + d*x)^2 + b*Log[F])))/(4*d)
```

Maple [B] time = 0.042, size = 208, normalized size = 2.4

$$\frac{F^a d^3 x^4}{4} F^{\frac{b}{(dx+c)^2}} + F^a d^2 F^{\frac{b}{(dx+c)^2}} c x^3 + \frac{3 F^a d c^2 x^2}{2} F^{\frac{b}{(dx+c)^2}} + F^a F^{\frac{b}{(dx+c)^2}} c^3 x + \frac{F^a c^4}{4 d} F^{\frac{b}{(dx+c)^2}} + \frac{F^a d b \ln(F) x^2}{4} F^{\frac{b}{(dx+c)^2}} + \frac{F^a b \ln(F) c x}{2} F^{\frac{b}{(dx+c)^2}} + \frac{F^a b \ln(F) c^2}{4 d} F^{\frac{b}{(dx+c)^2}} + \frac{F^a b^2 (\ln(F))^2}{4 d} Ei\left(1, -\frac{b \ln(F)}{(dx+c)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^3,x)
```

```
[Out] 1/4*F^a*d^3*F^(b/(d*x+c)^2)*x^4+F^a*d^2*F^(b/(d*x+c)^2)*c*x^3+3/2
*F^a*d*F^(b/(d*x+c)^2)*c^2*x^2+F^a*F^(b/(d*x+c)^2)*c^3*x+1/4*F^a/
d*F^(b/(d*x+c)^2)*c^4+1/4*F^a*d*b*ln(F)*F^(b/(d*x+c)^2)*x^2+1/2*F
^a*b*ln(F)*F^(b/(d*x+c)^2)*c*x+1/4*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*
c^2+1/4*F^a/d*b^2*ln(F)^2*Ei(1,-b*ln(F)/(d*x+c)^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{4} \left(F^a d^3 x^4 + 4 F^a c d^2 x^3 + \left(6 F^a c^2 d + F^a b d \log(F)\right) x^2 + 2 \left(2 F^a c^3 + F^a b c \log(F)\right) x\right) F^{\frac{b}{d^2 x^2 + 2 c d x + c^2}} + \int \frac{\left(F^a b^2 d^2 x^2 \log(F)^2 + 2 F^a b^2 c d x \log(F)^2 - F^a b c^4 \log(F)\right) F^{\frac{b}{d^2 x^2 + 2 c d x + c^2}}}{2 \left(d^3 x^3 + 3 c d^2 x^2 + 3 c^2 d x + c^3\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/4*(F^a*d^3*x^4 + 4*F^a*c*d^2*x^3 + (6*F^a*c^2*d + F^a*b*d*log(F
))*x^2 + 2*(2*F^a*c^3 + F^a*b*c*log(F))*x)*F^(b/(d^2*x^2 + 2*c*d*
x + c^2)) + integrate(1/2*(F^a*b^2*d^2*x^2*log(F)^2 + 2*F^a*b^2*c
*d*x*log(F)^2 - F^a*b*c^4*log(F))*F^(b/(d^2*x^2 + 2*c*d*x + c^2))
/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.25942, size = 196, normalized size = 2.25

$$-\frac{F^a b^2 \mathrm{Ei}\left(\frac{b \log(F)}{d^2 x^2 + 2 c d x + c^2}\right) \log(F)^2 - \left(d^4 x^4 + 4 c d^3 x^3 + 6 c^2 d^2 x^2 + 4 c^3 d x + c^4 + \left(b d^2 x^2 + 2 b c d x + b c^2\right) \log(F)\right) F^{\frac{a d^2 x^2 + 2 a c d x + a}{d^2 x^2 + 2 c d x + c}}}{4 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/4*(F^a*b^2*Ei(b*log(F)/(d^2*x^2 + 2*c*d*x + c^2))*log(F)^2 - (
d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4 + (b*d^2*
x^2 + 2*b*c*d*x + b*c^2)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^
2 + b)/(d^2*x^2 + 2*c*d*x + c^2)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3*F^(a + b/(d*x + c)^2), x)
```

3.319 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)\,dx$

Optimal. Leaf size=53

$$\frac{(c+dx)^2F^{a+\frac{b}{(c+dx)^2}}}{2d}-\frac{bF^a\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^2)/(2*d) - (b*F^a*ExpIntegralEi[
(b*Log[F])/(c + d*x)^2]*Log[F])/(2*d)
```

Rubi [A] time = 0.115492, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{(c+dx)^2F^{a+\frac{b}{(c+dx)^2}}}{2d}-\frac{bF^a\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x),x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^2)/(2*d) - (b*F^a*ExpIntegralEi[
(b*Log[F])/(c + d*x)^2]*Log[F])/(2*d)
```

Rubi in Sympy [A] time = 7.93445, size = 46, normalized size = 0.87

$$-\frac{F^ab\log{(F)}\operatorname{Ei}{\left(\frac{b\log{(F)}}{(c+dx)^2}\right)}}{2d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)^2}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c),x)
```

```
[Out] -F**a*b*log(F)*Ei(b*log(F)/(c + d*x)**2)/(2*d) + F**(a + b/(c + d
*x)**2)*(c + d*x)**2/(2*d)
```

Mathematica [A] time = 0.0453598, size = 47, normalized size = 0.89

$$\frac{F^a\left((c+dx)^2F^{\frac{b}{(c+dx)^2}}-b\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x),x]
```

```
[Out] (F^a*(F^(b/(c + d*x)^2)*(c + d*x)^2 - b*ExpIntegralEi[(b*Log[F])/
(c + d*x)^2]*Log[F]))/(2*d)
```

Maple [A] time = 0.033, size = 86, normalized size = 1.6

$$\frac{dF^ax^2}{2}F^{\frac{b}{(dx+c)^2}}+F^aF^{\frac{b}{(dx+c)^2}}cx+\frac{F^ac^2}{2\,d}F^{\frac{b}{(dx+c)^2}}+\frac{F^ab\ln(F)}{2\,d}Ei\left(1,-\frac{b\ln(F)}{(dx+c)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c),x)
```

```
[Out] 1/2*d*F^a*F^(b/(d*x+c)^2)*x^2+F^a*F^(b/(d*x+c)^2)*c*x+1/2/d*F^a*F
^(b/(d*x+c)^2)*c^2+1/2/d*F^a*b*ln(F)*Ei(1,-b*ln(F)/(d*x+c)^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(F^a dx^2 + 2\,F^a cx\right)F^{\frac{b}{d^2x^2+2\,cdx+c^2}} + \int \frac{\left(F^a bd^2x^2\log\left(F\right) + 2\,F^a bcdx\log\left(F\right)\right)F^{\frac{b}{d^2x^2+2\,cdx+c^2}}}{d^3x^3 + 3\,cd^2x^2 + 3\,c^2dx + c^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/2*(F^a*d*x^2 + 2*F^a*c*x)*F^(b/(d^2*x^2 + 2*c*d*x + c^2)) + int
egrate((F^a*b*d^2*x^2*log(F) + 2*F^a*b*c*d*x*log(F))*F^(b/(d^2*x^
2 + 2*c*d*x + c^2))/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.251662, size = 130, normalized size = 2.45

$$-\frac{F^a b\mathrm{Ei}\left(\frac{b\log(F)}{d^2x^2+2\,cdx+c^2}\right)\log\left(F\right) - \left(d^2x^2 + 2\,cdx + c^2\right)F^{\frac{ad^2x^2+2\,acdx+ac^2+b}{d^2x^2+2\,cdx+c^2}}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/2*(F^a*b*Ei(b*log(F)/(d^2*x^2 + 2*c*d*x + c^2))*log(F) - (d^2*
x^2 + 2*c*d*x + c^2)*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*
x^2 + 2*c*d*x + c^2)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)*F^(a + b/(d*x + c)^2), x)
```

3.320 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{c+dx}\,dx$

Optimal. Leaf size=22

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] -(F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)^2])/(2*d)
```

Rubi [A] time = 0.0713568, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x),x]
```

```
[Out] -(F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)^2])/(2*d)
```

Rubi in Sympy [A] time = 4.86458, size = 20, normalized size = 0.91

$$-\frac{F^a\,\text{Ei}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c),x)
```

```
[Out] -F**a*Ei(b*log(F)/(c + d*x)**2)/(2*d)
```

Mathematica [A] time = 0.00934062, size = 22, normalized size = 1.

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x),x]
```

```
[Out] -(F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)^2])/(2*d)
```

Maple [A] time = 0.029, size = 23, normalized size = 1.1

$$\frac{F^a}{2\,d}Ei\left(1,-\frac{b\ln(F)}{(dx+c)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c),x)

[Out] 1/2/d*F^a*Ei(1,-b*ln(F)/(d*x+c)^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c),x, algorithm="maxima")

[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c), x)
```

Fricas [A] time = 0.26512, size = 42, normalized size = 1.91

$$-\frac{F^a \mathrm{Ei}\left(\frac{b\log(F)}{d^2x^2+2\,cdx+c^2}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c),x, algorithm="fricas")

[Out] -1/2*F^a*Ei(b*log(F)/(d^2*x^2 + 2*c*d*x + c^2))/d
```

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

$$\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c),x)

[Out] Integral(F**(a + b/(c + d*x)**2)/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c),x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c), x)
```

3.321 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^3}\,dx$

Optimal. Leaf size=27

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)}$$

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

Rubi [A] time = 0.0674799, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^3,x]
```

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

Rubi in Sympy [A] time = 5.58834, size = 20, normalized size = 0.74

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**3,x)
```

```
[Out] -F**(a + b/(c + d*x)**2)/(2*b*d*log(F))
```

Mathematica [A] time = 0.0152402, size = 27, normalized size = 1.

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^3,x]
```

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

Maple [A] time = 0.003, size = 26, normalized size = 1.

$$-\frac{1}{2\ln(F)bd}F^{a+\frac{b}{(dx+c)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^3,x)

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

Maxima [A] time = 0.779907, size = 34, normalized size = 1.26

$$-\frac{F^{a+\frac{b}{(dx+c)^2}}}{2\,bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^3,x, algorithm="maxima")

[Out] -1/2*F^(a + b/(d*x + c)^2)/(b*d*log(F))
```

Fricas [A] time = 0.244657, size = 73, normalized size = 2.7

$$-\frac{F^{\frac{ad^2x^2+2\,acdx+ac^2+b}{d^2x^2+2\,cdx+c^2}}}{2\,bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^3,x, algorithm="fricas")

[Out] -1/2*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x +
c^2))/(b*d*log(F))
```

Sympy [A] time = 0.830086, size = 54, normalized size = 2.

$$\begin{cases} -\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log\left(F\right)} & \text{for}\: 2bd\log\left(F\right) \neq 0 \\ -\frac{1}{2c^2d+4cd^2x+2d^3x^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**3,x)

[Out] Piecewise((-F**(a + b/(c + d*x)**2)/(2*b*d*log(F)), Ne(2*b*d*log(
F), 0)), (-1/(2*c**2*d + 4*c*d**2*x + 2*d**3*x**2), True))
```

GIAC/XCAS [A] time = 0.246033, size = 34, normalized size = 1.26

$$-\frac{F^{a+\frac{b}{(dx+c)^2}}}{2\,bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^3,x, algorithm="giac")

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

3.322 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^5}\,dx$

Optimal. Leaf size=62

$$\frac{F^{a+\frac{b}{(c+dx)^2}}}{2b^2d\log^2(F)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^2}$$

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

Rubi [A] time = 0.141686, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{F^{a+\frac{b}{(c+dx)^2}}}{2b^2d\log^2(F)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^5,x]
```

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

Rubi in Sympy [A] time = 11.2783, size = 49, normalized size = 0.79

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\,(c+dx)^2\log{(F)}}+\frac{F^{a+\frac{b}{(c+dx)^2}}}{2b^2d\log{(F)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**5,x)
```

```
[Out] -F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)**2*log(F)) + F**(a + b/
(c + d*x)**2)/(2*b**2*d*log(F)**2)
```

Mathematica [A] time = 0.0433126, size = 47, normalized size = 0.76

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left((c+dx)^2-b\log(F)\right)}{2b^2d\log^2(F)(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^5,x]
```

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

Maple [B] time = 0.054, size = 185, normalized size = 3.

$$\frac{1}{(dx+c)^4}\left(\frac{d^3x^4}{2\,(\ln(F))^2\,b^2}e^{\left(a+\frac{b}{(dx+c)^2}\right)\ln(F)}-\frac{c\left(b\ln(F)-2\,c^2\right)x}{(\ln(F))^2\,b^2}e^{\left(a+\frac{b}{(dx+c)^2}\right)\ln(F)}-\frac{c^2\left(b\ln(F)-c^2\right)}{2\,(\ln(F))^2\,b^2d}e^{\left(a+\frac{b}{(dx+c)^2}\right)\ln(F)}-\frac{d\left(b\ln(\right.}{2\,(\mathrm{l}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^5,x)
```

```
[Out] (1/2/ln(F)^2/b^2*d^3*x^4*exp((a+b/(d*x+c)^2)*ln(F))-c*(b*ln(F)-2*
c^2)/ln(F)^2/b^2*x*exp((a+b/(d*x+c)^2)*ln(F))-1/2*c^2*(b*ln(F)-c^
2)/d/ln(F)^2/b^2*exp((a+b/(d*x+c)^2)*ln(F))-1/2*d*(b*ln(F)-6*c^2)
/ln(F)^2/b^2*x^2*exp((a+b/(d*x+c)^2)*ln(F))+2*d^2*c/ln(F)^2/b^2*x
^3*exp((a+b/(d*x+c)^2)*ln(F)))/(d*x+c)^4
```

Maxima [A] time = 0.824993, size = 136, normalized size = 2.19

$$\frac{\left(F^{a} d^{2} x^{2} + 2 \, F^{a} c d x + F^{a} c^{2} - F^{a} b \log\left(F\right)\right) F^{\frac{b}{d^{2} x^{2} + 2 \, c d x + c^{2}}}}{2 \, \left(b^{2} d^{3} x^{2} \log\left(F\right)^{2} + 2 \, b^{2} c d^{2} x \log\left(F\right)^{2} + b^{2} c^{2} d \log\left(F\right)^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^5,x, algorithm="maxima")
```

```
[Out] 1/2*(F^a*d^2*x^2 + 2*F^a*c*d*x + F^a*c^2 - F^a*b*log(F))*F^(b/(d^
2*x^2 + 2*c*d*x + c^2))/(b^2*d^3*x^2*log(F)^2 + 2*b^2*c*d^2*x*log
(F)^2 + b^2*c^2*d*log(F)^2)
```

Fricas [A] time = 0.23945, size = 135, normalized size = 2.18

$$\frac{\left(d^{2} x^{2} + 2 \, c d x + c^{2} - b \log\left(F\right)\right) F^{\frac{a d^{2} x^{2} + 2 \, a c d x + a c^{2} + b}{d^{2} x^{2} + 2 \, c d x + c^{2}}}}{2 \, {\left(b^{2} d^{3} x^{2} + 2 \, b^{2} c d^{2} x + b^{2} c^{2} d\right)} \log\left(F\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^5,x, algorithm="fricas")
```

```
[Out] 1/2*(d^2*x^2 + 2*c*d*x + c^2 - b*log(F))*F^((a*d^2*x^2 + 2*a*c*d*
x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))/((b^2*d^3*x^2 + 2*b^2*c
*d^2*x + b^2*c^2*d)*log(F)^2)
```

Sympy [A] time = 0.396908, size = 82, normalized size = 1.32

$$\frac{F^{a + \frac{b}{(c + d x)^{2}}} \left(- b \log{\left(F \right)} + c^{2} + 2 c d x + d^{2} x^{2}\right)}{2 b^{2} c^{2} d \log{\left(F \right)}^{2} + 4 b^{2} c d^{2} x \log{\left(F \right)}^{2} + 2 b^{2} d^{3} x^{2} \log{\left(F \right)}^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**5,x)
```

```
[Out] F**(a + b/(c + d*x)**2)*(-b*log(F) + c**2 + 2*c*d*x + d**2*x**2)/
(2*b**2*c**2*d*log(F)**2 + 4*b**2*c*d**2*x*log(F)**2 + 2*b**2*d**
3*x**2*log(F)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a + \frac{b}{(dx + c)^{2}}}}{(dx + c)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^5,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^5, x)
```

3.323 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^7}\,dx$

Optimal. Leaf size=91

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{b^3d\log^3(F)}+\frac{F^{a+\frac{b}{(c+dx)^2}}}{b^2d\log^2(F)(c+dx)^2}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^4}$$

```
[Out] -(F^(a + b/(c + d*x)^2)/(b^3*d*Log[F]^3)) + F^(a + b/(c + d*x)^2)
/(b^2*d*(c + d*x)^2*Log[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c +
 d*x)^4*Log[F])
```

Rubi [A] time = 0.216817, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{b^3d\log^3(F)}+\frac{F^{a+\frac{b}{(c+dx)^2}}}{b^2d\log^2(F)(c+dx)^2}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^7,x]
```

```
[Out] -(F^(a + b/(c + d*x)^2)/(b^3*d*Log[F]^3)) + F^(a + b/(c + d*x)^2)
/(b^2*d*(c + d*x)^2*Log[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c +
 d*x)^4*Log[F])
```

Rubi in Sympy [A] time = 19.034, size = 76, normalized size = 0.84

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\,(c+dx)^4\log{(F)}}+\frac{F^{a+\frac{b}{(c+dx)^2}}}{b^2d\,(c+dx)^2\log{(F)}^2}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{b^3d\log{(F)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**7,x)
```

```
[Out] -F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)**4*log(F)) + F**(a + b/
(c + d*x)**2)/(b**2*d*(c + d*x)**2*log(F)**2) - F**(a + b/(c + d*
x)**2)/(b**3*d*log(F)**3)
```

Mathematica [A] time = 0.0498466, size = 64, normalized size = 0.7

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}\left(b^2\log^2(F)-2b\log(F)(c+dx)^2+2(c+dx)^4\right)}{2b^3d\log^3(F)(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^7,x]
```

```
[Out] -(F^(a + b/(c + d*x)^2)*(2*(c + d*x)^4 - 2*b*(c + d*x)^2*Log[F] +
 b^2*Log[F]^2))/(2*b^3*d*(c + d*x)^4*Log[F]^3)
```

Maple [B] time = 0.087, size = 301, normalized size = 3.3

$$\frac{1}{(dx+c)^6}\left(\frac{d^3\left(b\ln(F)-15c^2\right)x^4}{(\ln(F))^3b^3}e^{\left(a+\frac{b}{(dx+c)^2}\right)\ln(F)}-\frac{d^5x^6}{(\ln(F))^3b^3}e^{\left(a+\frac{b}{(dx+c)^2}\right)\ln(F)}-\frac{c\left((\ln(F))^2b^2-4\ln(F)bc^2+6c^4\right)x}{(\ln(F))^3b^3}e^{\left(a+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b/(d*x+c)^2)/(d*x+c)^7,x)
```

```
[Out] (d^3*(b*ln(F)-15*c^2)/ln(F)^3/b^3*x^4*exp((a+b/(d*x+c)^2)*ln(F))-
d^5/ln(F)^3/b^3*x^6*exp((a+b/(d*x+c)^2)*ln(F))-c*(ln(F)^2*b^2-4*l
n(F)*b*c^2+6*c^4)/b^3/ln(F)^3*x*exp((a+b/(d*x+c)^2)*ln(F))-1/2*d*
(ln(F)^2*b^2-12*ln(F)*b*c^2+30*c^4)/ln(F)^3/b^3*x^2*exp((a+b/(d*x
+c)^2)*ln(F))-6*d^4*c/ln(F)^3/b^3*x^5*exp((a+b/(d*x+c)^2)*ln(F))-
1/2*(ln(F)^2*b^2-2*ln(F)*b*c^2+2*c^4)*c^2/b^3/ln(F)^3/d*exp((a+b/
(d*x+c)^2)*ln(F))+4*c*d^2*(b*ln(F)-5*c^2)/ln(F)^3/b^3*x^3*exp((a+
b/(d*x+c)^2)*ln(F)))/(d*x+c)^6
```

Maxima [A] time = 1.07401, size = 281, normalized size = 3.09

$$-\frac{\left(2F^ad^4x^4+8F^acd^3x^3+2F^ac^4-2F^abc^2\log(F)+F^ab^2\log(F)^2+2\left(6F^ac^2d^2-F^abd^2\log(F)\right)x^2+4\left(2F^ac^3d-F^abcd\log\right.\right.}{2\left(b^3d^5x^4\log(F)^3+4b^3cd^4x^3\log(F)^3+6b^3c^2d^3x^2\log(F)^3+4b^3c^3d^2x\log(F)^3+b^3c^4d\log(F)^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] -1/2*(2*F^a*d^4*x^4 + 8*F^a*c*d^3*x^3 + 2*F^a*c^4 - 2*F^a*b*c^2*l
og(F) + F^a*b^2*log(F)^2 + 2*(6*F^a*c^2*d^2 - F^a*b*d^2*log(F))*x
^2 + 4*(2*F^a*c^3*d - F^a*b*c*d*log(F))*x)*F^(b/(d^2*x^2 + 2*c*d*
x + c^2))/(b^3*d^5*x^4*log(F)^3 + 4*b^3*c*d^4*x^3*log(F)^3 + 6*b^
3*c^2*d^3*x^2*log(F)^3 + 4*b^3*c^3*d^2*x*log(F)^3 + b^3*c^4*d*log
(F)^3)
```

Fricas [A] time = 0.299623, size = 243, normalized size = 2.67

$$-\frac{\left(2d^4x^4+8cd^3x^3+12c^2d^2x^2+8c^3dx+2c^4+b^2\log(F)^2-2\left(bd^2x^2+2bcdx+bc^2\right)\log(F)\right)F^{\frac{ad^2x^2+2acdx+ac^2+b}{d^2x^2+2cdx+c^2}}}{2\left(b^3d^5x^4+4b^3cd^4x^3+6b^3c^2d^3x^2+4b^3c^3d^2x+b^3c^4d\right)\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] -1/2*(2*d^4*x^4 + 8*c*d^3*x^3 + 12*c^2*d^2*x^2 + 8*c^3*d*x + 2*c^
4 + b^2*log(F)^2 - 2*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*log(F))*F^((
a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))/((b
^3*d^5*x^4 + 4*b^3*c*d^4*x^3 + 6*b^3*c^2*d^3*x^2 + 4*b^3*c^3*d^2*
x + b^3*c^4*d)*log(F)^3)
```

Sympy [A] time = 0.530087, size = 189, normalized size = 2.08

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left(-b^2\log(F)^2+2bc^2\log(F)+4bcdx\log(F)+2bd^2x^2\log(F)-2c^4-8c^3dx-12c^2d^2x^2-8cd^3x^3-2d^4x^4\right)}{2b^3c^4d\log(F)^3+8b^3c^3d^2x\log(F)^3+12b^3c^2d^3x^2\log(F)^3+8b^3cd^4x^3\log(F)^3+2b^3d^5x^4\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**7,x)
```

```
[Out] F**(a + b/(c + d*x)**2)*(-b**2*log(F)**2 + 2*b*c**2*log(F) + 4*b*
c*d*x*log(F) + 2*b*d**2*x**2*log(F) - 2*c**4 - 8*c**3*d*x - 12*c*
*2*d**2*x**2 - 8*c*d**3*x**3 - 2*d**4*x**4)/(2*b**3*c**4*d*log(F)
**3 + 8*b**3*c**3*d**2*x*log(F)**3 + 12*b**3*c**2*d**3*x**2*log(F
)**3 + 8*b**3*c*d**4*x**3*log(F)**3 + 2*b**3*d**5*x**4*log(F)**3)
```

GIAC/XCAS [A] time = 0.26983, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^7,x, algorithm="giac")
```

```
[Out] Done
```

3.324 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^9} dx$

Optimal. Leaf size=126

$$\frac{3F^{a+\frac{b}{(c+dx)^2}}}{b^4 d\log^4(F)} - \frac{3F^{a+\frac{b}{(c+dx)^2}}}{b^3 d\log^3(F)(c+dx)^2} + \frac{3F^{a+\frac{b}{(c+dx)^2}}}{2b^2 d\log^2(F)(c+dx)^4} - \frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^6}$$

```
[Out] (3*F^(a + b/(c + d*x)^2))/(b^4*d*Log[F]^4) - (3*F^(a + b/(c + d*x
)^2))/(b^3*d*(c + d*x)^2*Log[F]^3) + (3*F^(a + b/(c + d*x)^2))/(2
*b^2*d*(c + d*x)^4*Log[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c +
d*x)^6*Log[F])
```

Rubi [A] time = 0.301123, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{3F^{a+\frac{b}{(c+dx)^2}}}{b^4 d\log^4(F)} - \frac{3F^{a+\frac{b}{(c+dx)^2}}}{b^3 d\log^3(F)(c+dx)^2} + \frac{3F^{a+\frac{b}{(c+dx)^2}}}{2b^2 d\log^2(F)(c+dx)^4} - \frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^9,x]
```

```
[Out] (3*F^(a + b/(c + d*x)^2))/(b^4*d*Log[F]^4) - (3*F^(a + b/(c + d*x
)^2))/(b^3*d*(c + d*x)^2*Log[F]^3) + (3*F^(a + b/(c + d*x)^2))/(2
*b^2*d*(c + d*x)^4*Log[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c +
d*x)^6*Log[F])
```

Rubi in Sympy [A] time = 28.8236, size = 112, normalized size = 0.89

$$-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd(c+dx)^6\log(F)} + \frac{3F^{a+\frac{b}{(c+dx)^2}}}{2b^2 d(c+dx)^4\log(F)^2} - \frac{3F^{a+\frac{b}{(c+dx)^2}}}{b^3 d(c+dx)^2\log(F)^3} + \frac{3F^{a+\frac{b}{(c+dx)^2}}}{b^4 d\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**9,x)
```

```
[Out] -F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)**6*log(F)) + 3*F**(a +
b/(c + d*x)**2)/(2*b**2*d*(c + d*x)**4*log(F)**2) - 3*F**(a + b/(
c + d*x)**2)/(b**3*d*(c + d*x)**2*log(F)**3) + 3*F**(a + b/(c + d
*x)**2)/(b**4*d*log(F)**4)
```

Mathematica [A] time = 0.0628498, size = 73, normalized size = 0.58

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left(-\frac{b^3\log^3(F)}{(c+dx)^6} + \frac{3b^2\log^2(F)}{(c+dx)^4} - \frac{6b\log(F)}{(c+dx)^2} + 6\right)}{2b^4 d\log^4(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^9,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(6 - (6*b*Log[F])/(c + d*x)^2 + (3*b^2*Log
[F]^2)/(c + d*x)^4 - (b^3*Log[F]^3)/(c + d*x)^6))/(2*b^4*d*Log[F]
```

```
^4)
```

Maple [B] time = 0.128, size = 444, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^9,x)
```

```
[Out] (3*d^7/ln(F)^4/b^4*x^8*exp((a+b/(d*x+c)^2)*ln(F))-c*(ln(F)^3*b^3-
6*b^2*c^2*ln(F)^2+18*ln(F)*b*c^4-24*c^6)/b^4/ln(F)^4*x*exp((a+b/(
d*x+c)^2)*ln(F))-1/2*d*(ln(F)^3*b^3-18*b^2*c^2*ln(F)^2+90*ln(F)*b
*c^4-168*c^6)/ln(F)^4/b^4*x^2*exp((a+b/(d*x+c)^2)*ln(F))+3/2*d^3*
(ln(F)^2*b^2-30*ln(F)*b*c^2+140*c^4)/ln(F)^4/b^4*x^4*exp((a+b/(d*
x+c)^2)*ln(F))-3*d^5*(b*ln(F)-28*c^2)/ln(F)^4/b^4*x^6*exp((a+b/(d
*x+c)^2)*ln(F))+24*d^6*c/ln(F)^4/b^4*x^7*exp((a+b/(d*x+c)^2)*ln(F
))-1/2*(ln(F)^3*b^3-3*b^2*c^2*ln(F)^2+6*ln(F)*b*c^4-6*c^6)*c^2/b^
4/ln(F)^4/d*exp((a+b/(d*x+c)^2)*ln(F))+6*c*d^2*(ln(F)^2*b^2-10*ln
(F)*b*c^2+28*c^4)/ln(F)^4/b^4*x^3*exp((a+b/(d*x+c)^2)*ln(F))-6*c*
d^4*(3*b*ln(F)-28*c^2)/ln(F)^4/b^4*x^5*exp((a+b/(d*x+c)^2)*ln(F))
)/(d*x+c)^8
```

Maxima [A] time = 0.783292, size = 471, normalized size = 3.74

$$\frac{\left(6\,F^{a}d^{6}x^{6} + 36\,F^{a}cd^{5}x^{5} + 6\,F^{a}c^{6} - 6\,F^{a}bc^{4}\log\left(F\right) + 3\,F^{a}b^{2}c^{2}\log\left(F\right)^{2} - F^{a}b^{3}\log\left(F\right)^{3} + 6\,\left(15\,F^{a}c^{2}d^{4} - F^{a}bd^{4}\log\left(F\right)\right)x^{4} + 2\cdots}{2\,\left(b^{4}d^{7}x^{6}\log\left(F\right)^{4} + 6\,b^{4}cd^{6}x^{5}\log\left(F\right)^{4} + 15\,b^{4}c^{2}d^{5}x^{4}\log\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^9,x, algorithm="maxima")
```

```
[Out] 1/2*(6*F^a*d^6*x^6 + 36*F^a*c*d^5*x^5 + 6*F^a*c^6 - 6*F^a*b*c^4*l
og(F) + 3*F^a*b^2*c^2*log(F)^2 - F^a*b^3*log(F)^3 + 6*(15*F^a*c^2
*d^4 - F^a*b*d^4*log(F))*x^4 + 24*(5*F^a*c^3*d^3 - F^a*b*c*d^3*lo
g(F))*x^3 + 3*(30*F^a*c^4*d^2 - 12*F^a*b*c^2*d^2*log(F) + F^a*b^2
*d^2*log(F)^2)*x^2 + 6*(6*F^a*c^5*d - 4*F^a*b*c^3*d*log(F) + F^a*
b^2*c*d*log(F)^2)*x)*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(b^4*d^7*x^6
*log(F)^4 + 6*b^4*c*d^6*x^5*log(F)^4 + 15*b^4*c^2*d^5*x^4*log(F)^
4 + 20*b^4*c^3*d^4*x^3*log(F)^4 + 15*b^4*c^4*d^3*x^2*log(F)^4 + 6
*b^4*c^5*d^2*x*log(F)^4 + b^4*c^6*d*log(F)^4)
```

Fricas [A] time = 0.27602, size = 387, normalized size = 3.07

$$\frac{\left(6\,d^{6}x^{6} + 36\,cd^{5}x^{5} + 90\,c^{2}d^{4}x^{4} + 120\,c^{3}d^{3}x^{3} + 90\,c^{4}d^{2}x^{2} + 36\,c^{5}dx + 6\,c^{6} - b^{3}\log\left(F\right)^{3} + 3\,\left(b^{2}d^{2}x^{2} + 2\,b^{2}cdx + b^{2}c^{2}\right)\log\left(F\right)^{2}\cdots}{2\,\left(b^{4}d^{7}x^{6} + 6\,b^{4}cd^{6}x^{5} + 15\,b^{4}c^{2}d^{5}x^{4} + 20\,b^{4}c^{3}d^{4}x^{3} + 15\,b^{4}c^{4}d^{3}x^{2} + 6\,b\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^9,x, algorithm="fricas")
```

```
[Out] 1/2*(6*d^6*x^6 + 36*c*d^5*x^5 + 90*c^2*d^4*x^4 + 120*c^3*d^3*x^3
+ 90*c^4*d^2*x^2 + 36*c^5*d*x + 6*c^6 - b^3*log(F)^3 + 3*(b^2*d^2
*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(F)^2 - 6*(b*d^4*x^4 + 4*b*c*d^3
*x^3 + 6*b*c^2*d^2*x^2 + 4*b*c^3*d*x + b*c^4)*log(F))*F^((a*d^2*x
^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))/((b^4*d^7*
```

```
x^6 + 6*b^4*c*d^6*x^5 + 15*b^4*c^2*d^5*x^4 + 20*b^4*c^3*d^4*x^3 +
 15*b^4*c^4*d^3*x^2 + 6*b^4*c^5*d^2*x + b^4*c^6*d)*log(F)^4)
```

Sympy [A] time = 0.660359, size = 333, normalized size = 2.64

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left(-b^3\log(F)^3+3b^2c^2\log(F)^2+6b^2cdx\log(F)^2+3b^2d^2x^2\log(F)^2-6bc^4\log(F)-24bc^3dx\log(F)-36bc^2d^2x^2\log\right.}{2b^4c^6d\log(F)^4+12b^4c^5d^2x\log(F)^4+30b^4c^4d^3x^2\log(F)^4+40b^4c^3d^4x^3\log}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**9,x)
```

```
[Out] F**(a + b/(c + d*x)**2)*(-b**3*log(F)**3 + 3*b**2*c**2*log(F)**2
+ 6*b**2*c*d*x*log(F)**2 + 3*b**2*d**2*x**2*log(F)**2 - 6*b*c**4*
log(F) - 24*b*c**3*d*x*log(F) - 36*b*c**2*d**2*x**2*log(F) - 24*b
*c*d**3*x**3*log(F) - 6*b*d**4*x**4*log(F) + 6*c**6 + 36*c**5*d*x
 + 90*c**4*d**2*x**2 + 120*c**3*d**3*x**3 + 90*c**2*d**4*x**4 + 3
6*c*d**5*x**5 + 6*d**6*x**6)/(2*b**4*c**6*d*log(F)**4 + 12*b**4*c
**5*d**2*x*log(F)**4 + 30*b**4*c**4*d**3*x**2*log(F)**4 + 40*b**4
*c**3*d**4*x**3*log(F)**4 + 30*b**4*c**2*d**5*x**4*log(F)**4 + 12
*b**4*c*d**6*x**5*log(F)**4 + 2*b**4*d**7*x**6*log(F)**4)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^9,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^9, x)
```

3.325 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^{11}}\,dx$

Optimal. Leaf size=31

$$-\frac{F^a \text{Gamma}\left(5,-\frac{b\log(F)}{(c+dx)^2}\right)}{2b^5 d\log^5(F)}$$

```
[Out] -(F^a*Gamma[5, -((b*Log[F])/(c + d*x)^2)])/(2*b^5*d*Log[F]^5)
```

Rubi [A] time = 0.0718986, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a \text{Gamma}\left(5,-\frac{b\log(F)}{(c+dx)^2}\right)}{2b^5 d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^11,x]
```

```
[Out] -(F^a*Gamma[5, -((b*Log[F])/(c + d*x)^2)])/(2*b^5*d*Log[F]^5)
```

Rubi in Sympy [A] time = 5.93607, size = 31, normalized size = 1.

$$-\frac{F^a\left(5,-\frac{b\log(F)}{(c+dx)^2}\right)}{2b^5 d\log(F)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**11,x)
```

```
[Out] -F**a*Gamma(5, -b*log(F)/(c + d*x)**2)/(2*b**5*d*log(F)**5)
```

Mathematica [B] time = 0.0702961, size = 89, normalized size = 2.87

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left(-\frac{b^4\log^4(F)}{(c+dx)^8}+\frac{4b^3\log^3(F)}{(c+dx)^6}-\frac{12b^2\log^2(F)}{(c+dx)^4}+\frac{24b\log(F)}{(c+dx)^2}-24\right)}{2b^5 d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^11,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(-24 + (24*b*Log[F])/(c + d*x)^2 - (12*b^2
*Log[F]^2)/(c + d*x)^4 + (4*b^3*Log[F]^3)/(c + d*x)^6 - (b^4*Log[
F]^4)/(c + d*x)^8))/(2*b^5*d*Log[F]^5)
```

Maple [B] time = 0.184, size = 609, normalized size = 19.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^11,x)
```

```
[Out] (-12*d^9/ln(F)^5/b^5*x^10*exp((a+b/(d*x+c)^2)*ln(F))-c*(ln(F)^4*b
^4-8*ln(F)^3*b^3*c^2+36*ln(F)^2*b^2*c^4-96*ln(F)*b*c^6+120*c^8)/b
^5/ln(F)^5*x*exp((a+b/(d*x+c)^2)*ln(F))-1/2*d*(ln(F)^4*b^4-24*ln(
F)^3*b^3*c^2+180*ln(F)^2*b^2*c^4-672*ln(F)*b*c^6+1080*c^8)/ln(F)^
5/b^5*x^2*exp((a+b/(d*x+c)^2)*ln(F))+2*d^3*(ln(F)^3*b^3-45*b^2*c^
2*ln(F)^2+420*ln(F)*b*c^4-1260*c^6)/ln(F)^5/b^5*x^4*exp((a+b/(d*x
+c)^2)*ln(F))-6*d^5*(ln(F)^2*b^2-56*ln(F)*b*c^2+420*c^4)/ln(F)^5/
b^5*x^6*exp((a+b/(d*x+c)^2)*ln(F))+12*d^7*(b*ln(F)-45*c^2)/ln(F)^
5/b^5*x^8*exp((a+b/(d*x+c)^2)*ln(F))-120*d^8*c/ln(F)^5/b^5*x^9*ex
p((a+b/(d*x+c)^2)*ln(F))-1/2*(ln(F)^4*b^4-4*ln(F)^3*b^3*c^2+12*ln
(F)^2*b^2*c^4-24*ln(F)*b*c^6+24*c^8)*c^2/b^5/ln(F)^5/d*exp((a+b/(
d*x+c)^2)*ln(F))+8*c*d^2*(ln(F)^3*b^3-15*b^2*c^2*ln(F)^2+84*ln(F)
*b*c^4-180*c^6)/ln(F)^5/b^5*x^3*exp((a+b/(d*x+c)^2)*ln(F))-12*c*d
^4*(3*ln(F)^2*b^2-56*ln(F)*b*c^2+252*c^4)/ln(F)^5/b^5*x^5*exp((a+
b/(d*x+c)^2)*ln(F))+96*c*d^6*(b*ln(F)-15*c^2)/ln(F)^5/b^5*x^7*exp
((a+b/(d*x+c)^2)*ln(F)))/(d*x+c)^10
```

Maxima [A] time = 0.84355, size = 710, normalized size = 22.9

$$-\frac{\left(24\,F^{a}d^{8}x^{8}+192\,F^{a}cd^{7}x^{7}+24\,F^{a}c^{8}-24\,F^{a}bc^{6}\log\left(F\right)+12\,F^{a}b^{2}c^{4}\log\left(F\right)^{2}-4\,F^{a}b^{3}c^{2}\log\left(F\right)^{3}+F^{a}b^{4}\log\left(F\right)^{4}+24\,\left(28\,F\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^11,x, algorithm="maxima")
```

```
[Out] -1/2*(24*F^a*d^8*x^8 + 192*F^a*c*d^7*x^7 + 24*F^a*c^8 - 24*F^a*b*
c^6*log(F) + 12*F^a*b^2*c^4*log(F)^2 - 4*F^a*b^3*c^2*log(F)^3 + F
^a*b^4*log(F)^4 + 24*(28*F^a*c^2*d^6 - F^a*b*d^6*log(F))*x^6 + 48
*(28*F^a*c^3*d^5 - 3*F^a*b*c*d^5*log(F))*x^5 + 12*(140*F^a*c^4*d^
4 - 30*F^a*b*c^2*d^4*log(F) + F^a*b^2*d^4*log(F)^2)*x^4 + 48*(28*
F^a*c^5*d^3 - 10*F^a*b*c^3*d^3*log(F) + F^a*b^2*c*d^3*log(F)^2)*x
^3 + 4*(168*F^a*c^6*d^2 - 90*F^a*b*c^4*d^2*log(F) + 18*F^a*b^2*c^
2*d^2*log(F)^2 - F^a*b^3*d^2*log(F)^3)*x^2 + 8*(24*F^a*c^7*d - 18
*F^a*b*c^5*d*log(F) + 6*F^a*b^2*c^3*d*log(F)^2 - F^a*b^3*c*d*log(
F)^3)*x)*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(b^5*d^9*x^8*log(F)^5 +
8*b^5*c*d^8*x^7*log(F)^5 + 28*b^5*c^2*d^7*x^6*log(F)^5 + 56*b^5*c
^3*d^6*x^5*log(F)^5 + 70*b^5*c^4*d^5*x^4*log(F)^5 + 56*b^5*c^5*d^
4*x^3*log(F)^5 + 28*b^5*c^6*d^3*x^2*log(F)^5 + 8*b^5*c^7*d^2*x*lo
g(F)^5 + b^5*c^8*d*log(F)^5)
```

Fricas [A] time = 0.276665, size = 567, normalized size = 18.29

$$-\frac{\left(24\,d^{8}x^{8}+192\,cd^{7}x^{7}+672\,c^{2}d^{6}x^{6}+1344\,c^{3}d^{5}x^{5}+1680\,c^{4}d^{4}x^{4}+1344\,c^{5}d^{3}x^{3}+672\,c^{6}d^{2}x^{2}+192\,c^{7}dx+24\,c^{8}+b^{4}\log\left(F\right)^{\cdots}\right.}{2\,\left(b^{5}d^{9}x^{8}+8\,b^{5}\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^11,x, algorithm="fricas")
```

```
[Out] -1/2*(24*d^8*x^8 + 192*c*d^7*x^7 + 672*c^2*d^6*x^6 + 1344*c^3*d^5
*x^5 + 1680*c^4*d^4*x^4 + 1344*c^5*d^3*x^3 + 672*c^6*d^2*x^2 + 19
2*c^7*d*x + 24*c^8 + b^4*log(F)^4 - 4*(b^3*d^2*x^2 + 2*b^3*c*d*x
+ b^3*c^2)*log(F)^3 + 12*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c
^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*log(F)^2 - 24*(b*d^6*x^6 +
6*b*c*d^5*x^5 + 15*b*c^2*d^4*x^4 + 20*b*c^3*d^3*x^3 + 15*b*c^4*d^
```

```
2*x^2 + 6*b*c^5*d*x + b*c^6)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x +
a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))/((b^5*d^9*x^8 + 8*b^5*c*d^8
*x^7 + 28*b^5*c^2*d^7*x^6 + 56*b^5*c^3*d^6*x^5 + 70*b^5*c^4*d^5*x
^4 + 56*b^5*c^5*d^4*x^3 + 28*b^5*c^6*d^3*x^2 + 8*b^5*c^7*d^2*x +
b^5*c^8*d)*log(F)^5)
```

Sympy [A] time = 0.826559, size = 518, normalized size = 16.71

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left(-b^4\log(F)^4+4b^3c^2\log(F)^3+8b^3cdx\log(F)^3+4b^3d^2x^2\log(F)^3-12b^2c^4\log(F)^2-48b^2c^3dx\log(F)^2-72b^2c^2\right.}{2b^5c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**11,x)
```

```
[Out] F**(a + b/(c + d*x)**2)*(-b**4*log(F)**4 + 4*b**3*c**2*log(F)**3
+ 8*b**3*c*d*x*log(F)**3 + 4*b**3*d**2*x**2*log(F)**3 - 12*b**2*c
**4*log(F)**2 - 48*b**2*c**3*d*x*log(F)**2 - 72*b**2*c**2*d**2*x*
*2*log(F)**2 - 48*b**2*c*d**3*x**3*log(F)**2 - 12*b**2*d**4*x**4*
log(F)**2 + 24*b*c**6*log(F) + 144*b*c**5*d*x*log(F) + 360*b*c**4
*d**2*x**2*log(F) + 480*b*c**3*d**3*x**3*log(F) + 360*b*c**2*d**4
*x**4*log(F) + 144*b*c*d**5*x**5*log(F) + 24*b*d**6*x**6*log(F) -
 24*c**8 - 192*c**7*d*x - 672*c**6*d**2*x**2 - 1344*c**5*d**3*x**
3 - 1680*c**4*d**4*x**4 - 1344*c**3*d**5*x**5 - 672*c**2*d**6*x**
6 - 192*c*d**7*x**7 - 24*d**8*x**8)/(2*b**5*c**8*d*log(F)**5 + 16
*b**5*c**7*d**2*x*log(F)**5 + 56*b**5*c**6*d**3*x**2*log(F)**5 +
112*b**5*c**5*d**4*x**3*log(F)**5 + 140*b**5*c**4*d**5*x**4*log(F
)**5 + 112*b**5*c**3*d**6*x**5*log(F)**5 + 56*b**5*c**2*d**7*x**6
*log(F)**5 + 16*b**5*c*d**8*x**7*log(F)**5 + 2*b**5*d**9*x**8*log
(F)**5)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^11,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^11, x)
```

3.326 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^{13}}\,dx$

Optimal. Leaf size=31

$$\frac{F^a\text{Gamma}\left(6,-\frac{b\log(F)}{(c+dx)^2}\right)}{2b^6d\log^6(F)}$$

```
[Out] (F^a*Gamma[6, -((b*Log[F])/(c + d*x)^2)])/(2*b^6*d*Log[F]^6)
```

Rubi [A] time = 0.0709124, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(6,-\frac{b\log(F)}{(c+dx)^2}\right)}{2b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^13,x]
```

```
[Out] (F^a*Gamma[6, -((b*Log[F])/(c + d*x)^2)])/(2*b^6*d*Log[F]^6)
```

Rubi in Sympy [A] time = 5.91214, size = 29, normalized size = 0.94

$$\frac{F^a\left(6,-\frac{b\log(F)}{(c+dx)^2}\right)}{2b^6d\log(F)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**13,x)
```

```
[Out] F**a*Gamma(6, -b*log(F)/(c + d*x)**2)/(2*b**6*d*log(F)**6)
```

Mathematica [B] time = 0.0893901, size = 105, normalized size = 3.39

$$\frac{F^{a+\frac{b}{(c+dx)^2}}\left(-\frac{b^5\log^5(F)}{(c+dx)^{10}}+\frac{5b^4\log^4(F)}{(c+dx)^8}-\frac{20b^3\log^3(F)}{(c+dx)^6}+\frac{60b^2\log^2(F)}{(c+dx)^4}-\frac{120b\log(F)}{(c+dx)^2}+120\right)}{2b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^13,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(120 - (120*b*Log[F])/(c + d*x)^2 + (60*b^
2*Log[F]^2)/(c + d*x)^4 - (20*b^3*Log[F]^3)/(c + d*x)^6 + (5*b^4*
Log[F]^4)/(c + d*x)^8 - (b^5*Log[F]^5)/(c + d*x)^10))/(2*b^6*d*Lo
g[F]^6)
```

Maple [B] time = 0.25, size = 797, normalized size = 25.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^13,x)
```

```
[Out] (60*d^11/ln(F)^6/b^6*x^12*exp((a+b/(d*x+c)^2)*ln(F))+240*c*d^6*(l
n(F)^2*b^2-30*ln(F)*b*c^2+198*c^4)/ln(F)^6/b^6*x^7*exp((a+b/(d*x+
c)^2)*ln(F))-600*c*d^8*(b*ln(F)-22*c^2)/ln(F)^6/b^6*x^9*exp((a+b/
(d*x+c)^2)*ln(F))-1/2*d*(ln(F)^5*b^5-30*ln(F)^4*b^4*c^2+300*ln(F)
^3*b^3*c^4-1680*ln(F)^2*b^2*c^6+5400*ln(F)*b*c^8-7920*c^10)/ln(F)
^6/b^6*x^2*exp((a+b/(d*x+c)^2)*ln(F))+5/2*d^3*(ln(F)^4*b^4-60*ln(
F)^3*b^3*c^2+840*ln(F)^2*b^2*c^4-5040*ln(F)*b*c^6+11880*c^8)/ln(F
)^6/b^6*x^4*exp((a+b/(d*x+c)^2)*ln(F))-10*d^5*(ln(F)^3*b^3-84*b^2
*c^2*ln(F)^2+1260*ln(F)*b*c^4-5544*c^6)/ln(F)^6/b^6*x^6*exp((a+b/
(d*x+c)^2)*ln(F))+30*d^7*(ln(F)^2*b^2-90*ln(F)*b*c^2+990*c^4)/ln(
F)^6/b^6*x^8*exp((a+b/(d*x+c)^2)*ln(F))-60*d^9*(b*ln(F)-66*c^2)/l
n(F)^6/b^6*x^10*exp((a+b/(d*x+c)^2)*ln(F))+720*d^10*c/ln(F)^6/b^6
*x^11*exp((a+b/(d*x+c)^2)*ln(F))-1/2*(ln(F)^5*b^5-5*ln(F)^4*b^4*c
^2+20*ln(F)^3*b^3*c^4-60*ln(F)^2*b^2*c^6+120*ln(F)*b*c^8-120*c^10
)*c^2/b^6/ln(F)^6/d*exp((a+b/(d*x+c)^2)*ln(F))-c*(ln(F)^5*b^5-10*
ln(F)^4*b^4*c^2+60*ln(F)^3*b^3*c^4-240*ln(F)^2*b^2*c^6+600*ln(F)*
b*c^8-720*c^10)/b^6/ln(F)^6*x*exp((a+b/(d*x+c)^2)*ln(F))+10*c*d^2
*(ln(F)^4*b^4-20*ln(F)^3*b^3*c^2+168*ln(F)^2*b^2*c^4-720*ln(F)*b*
c^6+1320*c^8)/ln(F)^6/b^6*x^3*exp((a+b/(d*x+c)^2)*ln(F))-60*c*d^4
*(ln(F)^3*b^3-28*b^2*c^2*ln(F)^2+252*ln(F)*b*c^4-792*c^6)/ln(F)^6
/b^6*x^5*exp((a+b/(d*x+c)^2)*ln(F)))/(d*x+c)^12
```

Maxima [A] time = 0.791545, size = 999, normalized size = 32.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^13,x, algorithm="maxima")
```

```
[Out] 1/2*(120*F^a*d^10*x^10 + 1200*F^a*c*d^9*x^9 + 120*F^a*c^10 - 120*
F^a*b*c^8*log(F) + 60*F^a*b^2*c^6*log(F)^2 - 20*F^a*b^3*c^4*log(F
)^3 + 5*F^a*b^4*c^2*log(F)^4 - F^a*b^5*log(F)^5 + 120*(45*F^a*c^2
*d^8 - F^a*b*d^8*log(F))*x^8 + 960*(15*F^a*c^3*d^7 - F^a*b*c*d^7*
log(F))*x^7 + 60*(420*F^a*c^4*d^6 - 56*F^a*b*c^2*d^6*log(F) + F^a
*b^2*d^6*log(F)^2)*x^6 + 120*(252*F^a*c^5*d^5 - 56*F^a*b*c^3*d^5*
log(F) + 3*F^a*b^2*c*d^5*log(F)^2)*x^5 + 20*(1260*F^a*c^6*d^4 - 4
20*F^a*b*c^4*d^4*log(F) + 45*F^a*b^2*c^2*d^4*log(F)^2 - F^a*b^3*d
^4*log(F)^3)*x^4 + 80*(180*F^a*c^7*d^3 - 84*F^a*b*c^5*d^3*log(F)
+ 15*F^a*b^2*c^3*d^3*log(F)^2 - F^a*b^3*c*d^3*log(F)^3)*x^3 + 5*(
1080*F^a*c^8*d^2 - 672*F^a*b*c^6*d^2*log(F) + 180*F^a*b^2*c^4*d^2
*log(F)^2 - 24*F^a*b^3*c^2*d^2*log(F)^3 + F^a*b^4*d^2*log(F)^4)*x
^2 + 10*(120*F^a*c^9*d - 96*F^a*b*c^7*d*log(F) + 36*F^a*b^2*c^5*d
*log(F)^2 - 8*F^a*b^3*c^3*d*log(F)^3 + F^a*b^4*c*d*log(F)^4)*x)*F
^(b/(d^2*x^2 + 2*c*d*x + c^2))/(b^6*d^11*x^10*log(F)^6 + 10*b^6*c
*d^10*x^9*log(F)^6 + 45*b^6*c^2*d^9*x^8*log(F)^6 + 120*b^6*c^3*d^
8*x^7*log(F)^6 + 210*b^6*c^4*d^7*x^6*log(F)^6 + 252*b^6*c^5*d^6*x
^5*log(F)^6 + 210*b^6*c^6*d^5*x^4*log(F)^6 + 120*b^6*c^7*d^4*x^3*
log(F)^6 + 45*b^6*c^8*d^3*x^2*log(F)^6 + 10*b^6*c^9*d^2*x*log(F)^
6 + b^6*c^10*d*log(F)^6)
```

Fricas [A] time = 0.293858, size = 787, normalized size = 25.39

$$\frac{\left(120\, d^{10} x^{10} + 1200\, c d^{9} x^{9} + 5400\, c^{2} d^{8} x^{8} + 14400\, c^{3} d^{7} x^{7} + 25200\, c^{4} d^{6} x^{6} + 30240\, c^{5} d^{5} x^{5} + 25200\, c^{6} d^{4} x^{4} + 14400\, c^{7} d^{3} x^{3} + 540\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^13,x, algorithm="fricas")
```

```
[Out] 1/2*(120*d^10*x^10 + 1200*c*d^9*x^9 + 5400*c^2*d^8*x^8 + 14400*c^
3*d^7*x^7 + 25200*c^4*d^6*x^6 + 30240*c^5*d^5*x^5 + 25200*c^6*d^4
*x^4 + 14400*c^7*d^3*x^3 + 5400*c^8*d^2*x^2 + 1200*c^9*d*x + 120*
c^10 - b^5*log(F)^5 + 5*(b^4*d^2*x^2 + 2*b^4*c*d*x + b^4*c^2)*log
(F)^4 - 20*(b^3*d^4*x^4 + 4*b^3*c*d^3*x^3 + 6*b^3*c^2*d^2*x^2 + 4
*b^3*c^3*d*x + b^3*c^4)*log(F)^3 + 60*(b^2*d^6*x^6 + 6*b^2*c*d^5*
x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^
2 + 6*b^2*c^5*d*x + b^2*c^6)*log(F)^2 - 120*(b*d^8*x^8 + 8*b*c*d^
7*x^7 + 28*b*c^2*d^6*x^6 + 56*b*c^3*d^5*x^5 + 70*b*c^4*d^4*x^4 +
56*b*c^5*d^3*x^3 + 28*b*c^6*d^2*x^2 + 8*b*c^7*d*x + b*c^8)*log(F)
)*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2
))/((b^6*d^11*x^10 + 10*b^6*c*d^10*x^9 + 45*b^6*c^2*d^9*x^8 + 120
*b^6*c^3*d^8*x^7 + 210*b^6*c^4*d^7*x^6 + 252*b^6*c^5*d^6*x^5 + 21
0*b^6*c^6*d^5*x^4 + 120*b^6*c^7*d^4*x^3 + 45*b^6*c^8*d^3*x^2 + 10
*b^6*c^9*d^2*x + b^6*c^10*d)*log(F)^6)
```

Sympy [A] time = 1.16355, size = 745, normalized size = 24.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**13,x)
```

```
[Out] F**(a + b/(c + d*x)**2)*(-b**5*log(F)**5 + 5*b**4*c**2*log(F)**4
+ 10*b**4*c*d*x*log(F)**4 + 5*b**4*d**2*x**2*log(F)**4 - 20*b**3*
c**4*log(F)**3 - 80*b**3*c**3*d*x*log(F)**3 - 120*b**3*c**2*d**2*
x**2*log(F)**3 - 80*b**3*c*d**3*x**3*log(F)**3 - 20*b**3*d**4*x**
4*log(F)**3 + 60*b**2*c**6*log(F)**2 + 360*b**2*c**5*d*x*log(F)**
2 + 900*b**2*c**4*d**2*x**2*log(F)**2 + 1200*b**2*c**3*d**3*x**3*
log(F)**2 + 900*b**2*c**2*d**4*x**4*log(F)**2 + 360*b**2*c*d**5*x
**5*log(F)**2 + 60*b**2*d**6*x**6*log(F)**2 - 120*b*c**8*log(F) -
 960*b*c**7*d*x*log(F) - 3360*b*c**6*d**2*x**2*log(F) - 6720*b*c*
*5*d**3*x**3*log(F) - 8400*b*c**4*d**4*x**4*log(F) - 6720*b*c**3*
d**5*x**5*log(F) - 3360*b*c**2*d**6*x**6*log(F) - 960*b*c*d**7*x*
*7*log(F) - 120*b*d**8*x**8*log(F) + 120*c**10 + 1200*c**9*d*x +
5400*c**8*d**2*x**2 + 14400*c**7*d**3*x**3 + 25200*c**6*d**4*x**4
 + 30240*c**5*d**5*x**5 + 25200*c**4*d**6*x**6 + 14400*c**3*d**7*
x**7 + 5400*c**2*d**8*x**8 + 1200*c*d**9*x**9 + 120*d**10*x**10)/
(2*b**6*c**10*d*log(F)**6 + 20*b**6*c**9*d**2*x*log(F)**6 + 90*b*
*6*c**8*d**3*x**2*log(F)**6 + 240*b**6*c**7*d**4*x**3*log(F)**6 +
 420*b**6*c**6*d**5*x**4*log(F)**6 + 504*b**6*c**5*d**6*x**5*log(
F)**6 + 420*b**6*c**4*d**7*x**6*log(F)**6 + 240*b**6*c**3*d**8*x*
*7*log(F)**6 + 90*b**6*c**2*d**9*x**8*log(F)**6 + 20*b**6*c*d**10
*x**9*log(F)**6 + 2*b**6*d**11*x**10*log(F)**6)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^13,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^13, x)
```

3.327 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^{10}\,dx$

Optimal. Leaf size=49

$$\frac{F^a(c+dx)^{11}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] (F^a*(c + d*x)^11*Gamma[-11/2, -((b*Log[F])/(c + d*x)^2)]*(-((b*L
og[F])/(c + d*x)^2))^(11/2))/(2*d)
```

Rubi [A] time = 0.0764948, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$\frac{F^a(c+dx)^{11}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{11/2}\text{Gamma}\left(-\frac{11}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^10,x]
```

```
[Out] (F^a*(c + d*x)^11*Gamma[-11/2, -((b*Log[F])/(c + d*x)^2)]*(-((b*L
og[F])/(c + d*x)^2))^(11/2))/(2*d)
```

Rubi in Sympy [A] time = 5.89205, size = 48, normalized size = 0.98

$$\frac{F^a\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{11}{2}}(c+dx)^{11}\left(-\frac{11}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**10,x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**2)**(11/2)*(c + d*x)**11*Gamma(-11/2,
-b*log(F)/(c + d*x)**2)/(2*d)
```

Mathematica [B] time = 0.150676, size = 145, normalized size = 2.96

$$\frac{F^a\left((c+dx)F^{\frac{b}{(c+dx)^2}}\left(32b^5\log^5(F)+16b^4\log^4(F)(c+dx)^2+24b^3\log^3(F)(c+dx)^4+60b^2\log^2(F)(c+dx)^6+210b\log(F)(c+\right.\right.}{10395d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^10,x]
```

```
[Out] (F^a*(-32*b^(11/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)
]*Log[F]^(11/2) + F^(b/(c + d*x)^2)*(c + d*x)*(945*(c + d*x)^10 +
 210*b*(c + d*x)^8*Log[F] + 60*b^2*(c + d*x)^6*Log[F]^2 + 24*b^3*
(c + d*x)^4*Log[F]^3 + 16*b^4*(c + d*x)^2*Log[F]^4 + 32*b^5*Log[F
]^5)))/(10395*d)
```

Maple [B] time = 0.124, size = 1173, normalized size = 23.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^10,x)
```

```
[Out] 16/10395*F^a*d^2*b^4*ln(F)^4*F^(b/(d*x+c)^2)*x^3+2/99*F^a*d^8*b*l
n(F)*F^(b/(d*x+c)^2)*x^9+4/99*F^a*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^6
*x+8/693*F^a*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c^4*x+16/3465*F^a*b^4*ln
(F)^4*F^(b/(d*x+c)^2)*c^2*x+2/11*F^a*b*ln(F)*F^(b/(d*x+c)^2)*c^8*
x+F^a*d^9*F^(b/(d*x+c)^2)*c*x^10+5*F^a*d^8*F^(b/(d*x+c)^2)*c^2*x^
9+15*F^a*d^7*F^(b/(d*x+c)^2)*c^3*x^8+30*F^a*d^6*F^(b/(d*x+c)^2)*c
^4*x^7+42*F^a*d^5*F^(b/(d*x+c)^2)*c^5*x^6+42*F^a*d^4*F^(b/(d*x+c)
^2)*c^6*x^5+30*F^a*d^3*F^(b/(d*x+c)^2)*c^7*x^4+15*F^a*d^2*F^(b/(d
*x+c)^2)*c^8*x^3+5*F^a*d*F^(b/(d*x+c)^2)*c^9*x^2+32/10395*F^a*b^5
*ln(F)^5*F^(b/(d*x+c)^2)*x+4/693*F^a/d*b^2*ln(F)^2*F^(b/(d*x+c)^2
)*c^7+8/3465*F^a/d*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c^5+16/10395*F^a/d
*b^4*ln(F)^4*F^(b/(d*x+c)^2)*c^3+32/10395*F^a/d*b^5*ln(F)^5*F^(b/
(d*x+c)^2)*c+2/99*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c^9+4/693*F^a*d^6
*b^2*ln(F)^2*F^(b/(d*x+c)^2)*x^7+8/3465*F^a*d^4*b^3*ln(F)^3*F^(b/
(d*x+c)^2)*x^5+F^a*F^(b/(d*x+c)^2)*c^10*x+1/11*F^a/d*F^(b/(d*x+c)
^2)*c^11+1/11*F^a*d^10*F^(b/(d*x+c)^2)*x^11-32/10395*F^a/d*b^6*ln
(F)^6*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))+4/3
3*F^a*d*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^5*x^2+8/693*F^a*d^3*b^3*ln(
F)^3*F^(b/(d*x+c)^2)*c*x^4+16/693*F^a*d^2*b^3*ln(F)^3*F^(b/(d*x+c
)^2)*c^2*x^3+16/693*F^a*d*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c^3*x^2+16/
3465*F^a*d*b^4*ln(F)^4*F^(b/(d*x+c)^2)*c*x^2+4/99*F^a*d^5*b^2*ln(
F)^2*F^(b/(d*x+c)^2)*c*x^6+4/33*F^a*d^4*b^2*ln(F)^2*F^(b/(d*x+c)^
2)*c^2*x^5+2/11*F^a*d^7*b*ln(F)*F^(b/(d*x+c)^2)*c*x^8+8/11*F^a*d^
6*b*ln(F)*F^(b/(d*x+c)^2)*c^2*x^7+56/33*F^a*d^5*b*ln(F)*F^(b/(d*x
+c)^2)*c^3*x^6+28/11*F^a*d^4*b*ln(F)*F^(b/(d*x+c)^2)*c^4*x^5+28/1
1*F^a*d^3*b*ln(F)*F^(b/(d*x+c)^2)*c^5*x^4+56/33*F^a*d^2*b*ln(F)*F
^(b/(d*x+c)^2)*c^6*x^3+8/11*F^a*d*b*ln(F)*F^(b/(d*x+c)^2)*c^7*x^2
+20/99*F^a*d^3*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^3*x^4+20/99*F^a*d^2*
b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^4*x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/10395*(945*F^a*d^10*x^11 + 10395*F^a*c*d^9*x^10 + 105*(495*F^a*
c^2*d^8 + 2*F^a*b*d^8*log(F))*x^9 + 945*(165*F^a*c^3*d^7 + 2*F^a*
b*c*d^7*log(F))*x^8 + 30*(10395*F^a*c^4*d^6 + 252*F^a*b*c^2*d^6*l
og(F) + 2*F^a*b^2*d^6*log(F)^2)*x^7 + 210*(2079*F^a*c^5*d^5 + 84*
F^a*b*c^3*d^5*log(F) + 2*F^a*b^2*c*d^5*log(F)^2)*x^6 + 6*(72765*F
^a*c^6*d^4 + 4410*F^a*b*c^4*d^4*log(F) + 210*F^a*b^2*c^2*d^4*log(
F)^2 + 4*F^a*b^3*d^4*log(F)^3)*x^5 + 30*(10395*F^a*c^7*d^3 + 882*
F^a*b*c^5*d^3*log(F) + 70*F^a*b^2*c^3*d^3*log(F)^2 + 4*F^a*b^3*c*
d^3*log(F)^3)*x^4 + (155925*F^a*c^8*d^2 + 17640*F^a*b*c^6*d^2*log
(F) + 2100*F^a*b^2*c^4*d^2*log(F)^2 + 240*F^a*b^3*c^2*d^2*log(F)^
3 + 16*F^a*b^4*d^2*log(F)^4)*x^3 + 3*(17325*F^a*c^9*d + 2520*F^a*
b*c^7*d*log(F) + 420*F^a*b^2*c^5*d*log(F)^2 + 80*F^a*b^3*c^3*d*lo
g(F)^3 + 16*F^a*b^4*c*d*log(F)^4)*x^2 + (10395*F^a*c^10 + 1890*F^
a*b*c^8*log(F) + 420*F^a*b^2*c^6*log(F)^2 + 120*F^a*b^3*c^4*log(F
)^3 + 48*F^a*b^4*c^2*log(F)^4 + 32*F^a*b^5*log(F)^5)*x)*F^(b/(d^2
*x^2 + 2*c*d*x + c^2)) + integrate(2/10395*(32*F^a*b^6*d*x*log(F)
^6 - 945*F^a*b*c^11*log(F) - 210*F^a*b^2*c^9*log(F)^2 - 60*F^a*b^
3*c^7*log(F)^3 - 24*F^a*b^4*c^5*log(F)^4 - 16*F^a*b^5*c^3*log(F)^
5)*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2
```

```
*d*x + c^3), x)
```

Fricas [A] time = 0.273549, size = 795, normalized size = 16.22

$$-\frac{32\sqrt{\pi}F^a b^6 \operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^2}}}{dx+c}\right)\log(F)^6 - \left(945\,d^{12}x^{11} + 10395\,cd^{11}x^{10} + 51975\,c^2d^{10}x^9 + 155925\,c^3d^9x^8 + 311850\,c^4d^8x^7 + 43\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/10395*(32*sqrt(pi)*F^a*b^6*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c)
)*log(F)^6 - (945*d^12*x^11 + 10395*c*d^11*x^10 + 51975*c^2*d^10*
x^9 + 155925*c^3*d^9*x^8 + 311850*c^4*d^8*x^7 + 436590*c^5*d^7*x^
6 + 436590*c^6*d^6*x^5 + 311850*c^7*d^5*x^4 + 155925*c^8*d^4*x^3
+ 51975*c^9*d^3*x^2 + 10395*c^10*d^2*x + 945*c^11*d + 32*(b^5*d^2
*x + b^5*c*d)*log(F)^5 + 16*(b^4*d^4*x^3 + 3*b^4*c*d^3*x^2 + 3*b^
4*c^2*d^2*x + b^4*c^3*d)*log(F)^4 + 24*(b^3*d^6*x^5 + 5*b^3*c*d^5
*x^4 + 10*b^3*c^2*d^4*x^3 + 10*b^3*c^3*d^3*x^2 + 5*b^3*c^4*d^2*x
+ b^3*c^5*d)*log(F)^3 + 60*(b^2*d^8*x^7 + 7*b^2*c*d^7*x^6 + 21*b^
2*c^2*d^6*x^5 + 35*b^2*c^3*d^5*x^4 + 35*b^2*c^4*d^4*x^3 + 21*b^2*
c^5*d^3*x^2 + 7*b^2*c^6*d^2*x + b^2*c^7*d)*log(F)^2 + 210*(b*d^10
*x^9 + 9*b*c*d^9*x^8 + 36*b*c^2*d^8*x^7 + 84*b*c^3*d^7*x^6 + 126*
b*c^4*d^6*x^5 + 126*b*c^5*d^5*x^4 + 84*b*c^6*d^4*x^3 + 36*b*c^7*d
^3*x^2 + 9*b*c^8*d^2*x + b*c^9*d)*log(F))*F^((a*d^2*x^2 + 2*a*c*d
*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/(
d^2*sqrt(-b*log(F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{10} F^{a+\frac{b}{(dx+c)^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^10*F^(a + b/(d*x + c)^2), x)
```

3.328 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^8\,dx$

Optimal. Leaf size=49

$$\frac{F^a(c+dx)^9\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{9/2}\text{Gamma}\left(-\frac{9}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

```
[Out] (F^a*(c + d*x)^9*Gamma[-9/2, -((b*Log[F])/(c + d*x)^2)]*(-((b*Log
[F])/(c + d*x)^2))^(9/2))/(2*d)
```

Rubi [A] time = 0.0788528, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a(c+dx)^9\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{9/2}\text{Gamma}\left(-\frac{9}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^8,x]
```

```
[Out] (F^a*(c + d*x)^9*Gamma[-9/2, -((b*Log[F])/(c + d*x)^2)]*(-((b*Log
[F])/(c + d*x)^2))^(9/2))/(2*d)
```

Rubi in Sympy [A] time = 5.72121, size = 48, normalized size = 0.98

$$\frac{F^a\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{9}{2}}(c+dx)^9\left(-\frac{9}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**8,x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**2)**(9/2)*(c + d*x)**9*Gamma(-9/2, -b*
log(F)/(c + d*x)**2)/(2*d)
```

Mathematica [B] time = 0.226479, size = 129, normalized size = 2.63

$$\frac{F^a\left((c+dx)F^{\frac{b}{(c+dx)^2}}\left(16b^4\log^4(F)+8b^3\log^3(F)(c+dx)^2+12b^2\log^2(F)(c+dx)^4+30b\log(F)(c+dx)^6+105(c+dx)^8\right)-16\cdots\right.}{945d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^8,x]
```

```
[Out] (F^a*(-16*b^(9/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)]
*Log[F]^(9/2) + F^(b/(c + d*x)^2)*(c + d*x)*(105*(c + d*x)^8 + 30
*b*(c + d*x)^6*Log[F] + 12*b^2*(c + d*x)^4*Log[F]^2 + 8*b^3*(c +
d*x)^2*Log[F]^3 + 16*b^4*Log[F]^4)))/(945*d)
```

Maple [B] time = 0.079, size = 826, normalized size = 16.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^8,x)
```

```
[Out] 1/9*F^a/d*F^(b/(d*x+c)^2)*c^9+1/9*F^a*d^8*F^(b/(d*x+c)^2)*x^9+F^a
*F^(b/(d*x+c)^2)*c^8*x+8/315*F^a*d*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c*
x^2-16/945*F^a/d*b^5*ln(F)^5*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln
(F))^(1/2)/(d*x+c))+10/9*F^a*d^3*b*ln(F)*F^(b/(d*x+c)^2)*c^3*x^4+
10/9*F^a*d^2*b*ln(F)*F^(b/(d*x+c)^2)*c^4*x^3+2/3*F^a*d*b*ln(F)*F^
(b/(d*x+c)^2)*c^5*x^2+4/63*F^a*d^3*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c*
x^4+8/63*F^a*d^2*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^2*x^3+8/63*F^a*d*b
^2*ln(F)^2*F^(b/(d*x+c)^2)*c^3*x^2+2/9*F^a*d^5*b*ln(F)*F^(b/(d*x+
c)^2)*c*x^6+2/3*F^a*d^4*b*ln(F)*F^(b/(d*x+c)^2)*c^2*x^5+16/945*F^
a*b^4*ln(F)^4*F^(b/(d*x+c)^2)*x+F^a*d^7*F^(b/(d*x+c)^2)*c*x^8+4*F
^a*d^6*F^(b/(d*x+c)^2)*c^2*x^7+28/3*F^a*d^5*F^(b/(d*x+c)^2)*c^3*x
^6+14*F^a*d^4*F^(b/(d*x+c)^2)*c^4*x^5+14*F^a*d^3*F^(b/(d*x+c)^2)*
c^5*x^4+28/3*F^a*d^2*F^(b/(d*x+c)^2)*c^6*x^3+4*F^a*d*F^(b/(d*x+c)
^2)*c^7*x^2+4/63*F^a*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^4*x+8/315*F^a*
b^3*ln(F)^3*F^(b/(d*x+c)^2)*c^2*x+2/9*F^a*b*ln(F)*F^(b/(d*x+c)^2)
*c^6*x+2/63*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c^7+4/315*F^a/d*b^2*ln(
F)^2*F^(b/(d*x+c)^2)*c^5+8/945*F^a/d*b^3*ln(F)^3*F^(b/(d*x+c)^2)*
c^3+16/945*F^a/d*b^4*ln(F)^4*F^(b/(d*x+c)^2)*c+2/63*F^a*d^6*b*ln(
F)*F^(b/(d*x+c)^2)*x^7+4/315*F^a*d^4*b^2*ln(F)^2*F^(b/(d*x+c)^2)*
x^5+8/945*F^a*d^2*b^3*ln(F)^3*F^(b/(d*x+c)^2)*x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{945}\left(105\,F^{a}d^{8}x^{9}+945\,F^{a}cd^{7}x^{8}+30\left(126\,F^{a}c^{2}d^{6}+F^{a}bd^{6}\log\left(F\right)\right)x^{7}+210\left(42\,F^{a}c^{3}d^{5}+F^{a}bcd^{5}\log\left(F\right)\right)x^{6}+6\left(2205\,F^{a}c^{4}d\right.\right.$$
$$+\int\frac{2\left(16\,F^{a}b^{5}dx\log\left(F\right)^{5}-105\,F^{a}bc^{9}\log\left(F\right)-30\,F^{a}b^{2}c^{7}\log\left(F\right)^{2}-12\,F^{a}b^{3}c^{5}\log\left(F\right)^{3}-8\,F^{a}b^{4}c^{3}\log\left(F\right)^{4}\right)F^{\frac{b}{d^{2}x^{2}+2\,cdx+c^{2}}}}{945\left(d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/945*(105*F^a*d^8*x^9 + 945*F^a*c*d^7*x^8 + 30*(126*F^a*c^2*d^6
+ F^a*b*d^6*log(F))*x^7 + 210*(42*F^a*c^3*d^5 + F^a*b*c*d^5*log(F
))*x^6 + 6*(2205*F^a*c^4*d^4 + 105*F^a*b*c^2*d^4*log(F) + 2*F^a*b
^2*d^4*log(F)^2)*x^5 + 30*(441*F^a*c^5*d^3 + 35*F^a*b*c^3*d^3*log
(F) + 2*F^a*b^2*c*d^3*log(F)^2)*x^4 + 2*(4410*F^a*c^6*d^2 + 525*F
^a*b*c^4*d^2*log(F) + 60*F^a*b^2*c^2*d^2*log(F)^2 + 4*F^a*b^3*d^2
*log(F)^3)*x^3 + 6*(630*F^a*c^7*d + 105*F^a*b*c^5*d*log(F) + 20*F
^a*b^2*c^3*d*log(F)^2 + 4*F^a*b^3*c*d*log(F)^3)*x^2 + (945*F^a*c^
8 + 210*F^a*b*c^6*log(F) + 60*F^a*b^2*c^4*log(F)^2 + 24*F^a*b^3*c
^2*log(F)^3 + 16*F^a*b^4*log(F)^4)*x)*F^(b/(d^2*x^2 + 2*c*d*x + c
^2)) + integrate(2/945*(16*F^a*b^5*d*x*log(F)^5 - 105*F^a*b*c^9*l
og(F) - 30*F^a*b^2*c^7*log(F)^2 - 12*F^a*b^3*c^5*log(F)^3 - 8*F^a
*b^4*c^3*log(F)^4)*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(d^3*x^3 + 3*c
*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.264092, size = 591, normalized size = 12.06

$$-\frac{16\,\sqrt{\pi}F^{a}b^{5}\operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^{2}}}}{dx+c}\right)\log\left(F\right)^{5}-\left(105\,d^{10}x^{9}+945\,cd^{9}x^{8}+3780\,c^{2}d^{8}x^{7}+8820\,c^{3}d^{7}x^{6}+13230\,c^{4}d^{6}x^{5}+13230\,c^{5}d^{5}x^{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/945*(16*sqrt(pi)*F^a*b^5*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))*
log(F)^5 - (105*d^10*x^9 + 945*c*d^9*x^8 + 3780*c^2*d^8*x^7 + 882
0*c^3*d^7*x^6 + 13230*c^4*d^6*x^5 + 13230*c^5*d^5*x^4 + 8820*c^6*
d^4*x^3 + 3780*c^7*d^3*x^2 + 945*c^8*d^2*x + 105*c^9*d + 16*(b^4*
d^2*x + b^4*c*d)*log(F)^4 + 8*(b^3*d^4*x^3 + 3*b^3*c*d^3*x^2 + 3*
b^3*c^2*d^2*x + b^3*c^3*d)*log(F)^3 + 12*(b^2*d^6*x^5 + 5*b^2*c*d
^5*x^4 + 10*b^2*c^2*d^4*x^3 + 10*b^2*c^3*d^3*x^2 + 5*b^2*c^4*d^2*
x + b^2*c^5*d)*log(F)^2 + 30*(b*d^8*x^7 + 7*b*c*d^7*x^6 + 21*b*c^
2*d^6*x^5 + 35*b*c^3*d^5*x^4 + 35*b*c^4*d^4*x^3 + 21*b*c^5*d^3*x^
2 + 7*b*c^6*d^2*x + b*c^7*d)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x +
a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/(d^2*s
qrt(-b*log(F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^8 F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^8*F^(a + b/(d*x + c)^2), x)
```

3.329 $\int F^{a+\frac{b}{(c+dx)^2}} (c+dx)^6 \, dx$

Optimal. Leaf size=170

$$-\frac{8\sqrt{\pi}b^{7/2}F^a\log^{\frac{7}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{105d}+\frac{8b^3\log^3(F)(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{105d}+\frac{4b^2\log^2(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^2}}}{105d}+\frac{(c+dx)^7F^{a+\frac{b}{(c+dx)^2}}}{7d}+\frac{2b\log(F)(c+dx)^5F^{a+\frac{b}{(c+dx)^2}}}{35d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^7)/(7*d) + (2*b*F^(a + b/(c + d*
x)^2)*(c + d*x)^5*Log[F])/(35*d) + (4*b^2*F^(a + b/(c + d*x)^2)*(
c + d*x)^3*Log[F]^2)/(105*d) + (8*b^3*F^(a + b/(c + d*x)^2)*(c +
d*x)*Log[F]^3)/(105*d) - (8*b^(7/2)*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sq
rt[Log[F]])/(c + d*x)]*Log[F]^(7/2))/(105*d)
```

Rubi [A] time = 0.383799, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.19$

$$-\frac{8\sqrt{\pi}b^{7/2}F^a\log^{\frac{7}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{105d}+\frac{8b^3\log^3(F)(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{105d}+\frac{4b^2\log^2(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^2}}}{105d}+\frac{(c+dx)^7F^{a+\frac{b}{(c+dx)^2}}}{7d}+\frac{2b\log(F)(c+dx)^5F^{a+\frac{b}{(c+dx)^2}}}{35d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^6,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^7)/(7*d) + (2*b*F^(a + b/(c + d*
x)^2)*(c + d*x)^5*Log[F])/(35*d) + (4*b^2*F^(a + b/(c + d*x)^2)*(
c + d*x)^3*Log[F]^2)/(105*d) + (8*b^3*F^(a + b/(c + d*x)^2)*(c +
d*x)*Log[F]^3)/(105*d) - (8*b^(7/2)*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sq
rt[Log[F]])/(c + d*x)]*Log[F]^(7/2))/(105*d)
```

Rubi in Sympy [A] time = 34.1281, size = 156, normalized size = 0.92

$$-\frac{8\sqrt{\pi}F^ab^{\frac{7}{2}}\log(F)^{\frac{7}{2}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{105d}+\frac{8F^{a+\frac{b}{(c+dx)^2}}b^3(c+dx)\log(F)^3}{105d}+\frac{4F^{a+\frac{b}{(c+dx)^2}}b^2(c+dx)^3\log(F)^2}{105d}+\frac{2F^{a+\frac{b}{(c+dx)^2}}b(c+dx)^5\log(F)}{35d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)^7}{7d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**6,x)
```

```
[Out] -8*sqrt(pi)*F**a*b**(7/2)*log(F)**(7/2)*erfi(sqrt(b)*sqrt(log(F))
/(c + d*x))/(105*d) + 8*F**(a + b/(c + d*x)**2)*b**3*(c + d*x)*lo
g(F)**3/(105*d) + 4*F**(a + b/(c + d*x)**2)*b**2*(c + d*x)**3*log
(F)**2/(105*d) + 2*F**(a + b/(c + d*x)**2)*b*(c + d*x)**5*log(F)/
(35*d) + F**(a + b/(c + d*x)**2)*(c + d*x)**7/(7*d)
```

Mathematica [A] time = 0.171828, size = 113, normalized size = 0.66

$$\frac{F^a\left((c+dx)F^{\frac{b}{(c+dx)^2}}\left(8b^3\log^3(F)+4b^2\log^2(F)(c+dx)^2+6b\log(F)(c+dx)^4+15(c+dx)^6\right)-8\sqrt{\pi}b^{7/2}\log^{\frac{7}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F}}{c+dx}\right.\right.}{105d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^6,x]
```

```
[Out] (F^a*(-8*b^(7/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)]*
Log[F]^(7/2) + F^(b/(c + d*x)^2)*(c + d*x)*(15*(c + d*x)^6 + 6*b*
(c + d*x)^4*Log[F] + 4*b^2*(c + d*x)^2*Log[F]^2 + 8*b^3*Log[F]^3)
))/(105*d)
```

Maple [B] time = 0.064, size = 543, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^6,x)
```

```
[Out] 1/7*F^a*d^6*F^(b/(d*x+c)^2)*x^7+F^a*d^5*F^(b/(d*x+c)^2)*c*x^6+3*F
^a*d^4*F^(b/(d*x+c)^2)*c^2*x^5+5*F^a*d^3*F^(b/(d*x+c)^2)*c^3*x^4+
5*F^a*d^2*F^(b/(d*x+c)^2)*c^4*x^3+3*F^a*d*F^(b/(d*x+c)^2)*c^5*x^2
+F^a*F^(b/(d*x+c)^2)*c^6*x+1/7*F^a/d*F^(b/(d*x+c)^2)*c^7+2/35*F^a
*d^4*b*ln(F)*F^(b/(d*x+c)^2)*x^5+2/7*F^a*d^3*b*ln(F)*F^(b/(d*x+c)
^2)*c*x^4+4/7*F^a*d^2*b*ln(F)*F^(b/(d*x+c)^2)*c^2*x^3+4/7*F^a*d*b
*ln(F)*F^(b/(d*x+c)^2)*c^3*x^2+2/7*F^a*b*ln(F)*F^(b/(d*x+c)^2)*c^
4*x+2/35*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c^5+4/105*F^a*d^2*b^2*ln(F
)^2*F^(b/(d*x+c)^2)*x^3+4/35*F^a*d*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c*
x^2+4/35*F^a*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c^2*x+4/105*F^a/d*b^2*ln
(F)^2*F^(b/(d*x+c)^2)*c^3+8/105*F^a*b^3*ln(F)^3*F^(b/(d*x+c)^2)*x
+8/105*F^a/d*b^3*ln(F)^3*F^(b/(d*x+c)^2)*c-8/105*F^a/d*b^4*ln(F)^
4*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{105}\left(15\,F^a d^6 x^7+105\,F^a c d^5 x^6+3\left(105\,F^a c^2 d^4+2\,F^a b d^4\log(F)\right)x^5+15\left(35\,F^a c^3 d^3+2\,F^a b c d^3\log(F)\right)x^4+\left(525\,F^a c^4 d^2+\right.\right.$$
$$+\int\frac{2\left(8\,F^a b^4 dx\log(F)^4-15\,F^a bc^7\log(F)-6\,F^a b^2 c^5\log(F)^2-4\,F^a b^3 c^3\log(F)^3\right)F^{\frac{b}{d^2x^2+2\,cdx+c^2}}}{105\left(d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^6*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/105*(15*F^a*d^6*x^7 + 105*F^a*c*d^5*x^6 + 3*(105*F^a*c^2*d^4 +
2*F^a*b*d^4*log(F))*x^5 + 15*(35*F^a*c^3*d^3 + 2*F^a*b*c*d^3*log(
F))*x^4 + (525*F^a*c^4*d^2 + 60*F^a*b*c^2*d^2*log(F) + 4*F^a*b^2*
d^2*log(F)^2)*x^3 + 3*(105*F^a*c^5*d + 20*F^a*b*c^3*d*log(F) + 4*
F^a*b^2*c*d*log(F)^2)*x^2 + (105*F^a*c^6 + 30*F^a*b*c^4*log(F) +
12*F^a*b^2*c^2*log(F)^2 + 8*F^a*b^3*log(F)^3)*x)*F^(b/(d^2*x^2 +
2*c*d*x + c^2)) + integrate(2/105*(8*F^a*b^4*d*x*log(F)^4 - 15*F^
a*b*c^7*log(F) - 6*F^a*b^2*c^5*log(F)^2 - 4*F^a*b^3*c^3*log(F)^3)
*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d
*x + c^3), x)
```

Fricas [A] time = 0.26989, size = 425, normalized size = 2.5

$$-\frac{8\,\sqrt{\pi}F^{a}b^{4}\,\operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^{2}}}}{dx+c}\right)\log\left(F\right)^{4}-\left(15\,d^{8}x^{7}+105\,cd^{7}x^{6}+315\,c^{2}d^{6}x^{5}+525\,c^{3}d^{5}x^{4}+525\,c^{4}d^{4}x^{3}+315\,c^{5}d^{3}x^{2}+105\,c^{6}d^{2}\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^6*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/105*(8*sqrt(pi)*F^a*b^4*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))*l
og(F)^4 - (15*d^8*x^7 + 105*c*d^7*x^6 + 315*c^2*d^6*x^5 + 525*c^3
*d^5*x^4 + 525*c^4*d^4*x^3 + 315*c^5*d^3*x^2 + 105*c^6*d^2*x + 15
*c^7*d + 8*(b^3*d^2*x + b^3*c*d)*log(F)^3 + 4*(b^2*d^4*x^3 + 3*b^
2*c*d^3*x^2 + 3*b^2*c^2*d^2*x + b^2*c^3*d)*log(F)^2 + 6*(b*d^6*x^
5 + 5*b*c*d^5*x^4 + 10*b*c^2*d^4*x^3 + 10*b*c^3*d^3*x^2 + 5*b*c^4
*d^2*x + b*c^5*d)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/
(d^2*x^2 + 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/(d^2*sqrt(-b*log(
F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{6}F^{a+\frac{b}{(dx+c)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^6*F^(a + b/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^6*F^(a + b/(d*x + c)^2), x)
```

3.330 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^4\,dx$

Optimal. Leaf size=136

$$-\frac{4\sqrt{\pi}b^{5/2}F^a\log^{\frac{5}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{15d}+\frac{4b^2\log^2(F)(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{15d}+\frac{(c+dx)^5F^{a+\frac{b}{(c+dx)^2}}}{5d}+\frac{2b\log(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^2}}}{15d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^5)/(5*d) + (2*b*F^(a + b/(c + d*
x)^2)*(c + d*x)^3*Log[F])/(15*d) + (4*b^2*F^(a + b/(c + d*x)^2)*(
c + d*x)*Log[F]^2)/(15*d) - (4*b^(5/2)*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]
*Sqrt[Log[F]])/(c + d*x)]*Log[F]^(5/2))/(15*d)
```

Rubi [A] time = 0.282155, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19

$$-\frac{4\sqrt{\pi}b^{5/2}F^a\log^{\frac{5}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{15d}+\frac{4b^2\log^2(F)(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{15d}+\frac{(c+dx)^5F^{a+\frac{b}{(c+dx)^2}}}{5d}+\frac{2b\log(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^2}}}{15d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^4,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^5)/(5*d) + (2*b*F^(a + b/(c + d*
x)^2)*(c + d*x)^3*Log[F])/(15*d) + (4*b^2*F^(a + b/(c + d*x)^2)*(
c + d*x)*Log[F]^2)/(15*d) - (4*b^(5/2)*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]
*Sqrt[Log[F]])/(c + d*x)]*Log[F]^(5/2))/(15*d)
```

Rubi in Sympy [A] time = 24.6067, size = 124, normalized size = 0.91

$$-\frac{4\sqrt{\pi}F^ab^{\frac{5}{2}}\log(F)^{\frac{5}{2}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{15d}+\frac{4F^{a+\frac{b}{(c+dx)^2}}b^2(c+dx)\log(F)^2}{15d}+\frac{2F^{a+\frac{b}{(c+dx)^2}}b(c+dx)^3\log(F)}{15d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)^5}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**4,x)
```

```
[Out] -4*sqrt(pi)*F**a*b**(5/2)*log(F)**(5/2)*erfi(sqrt(b)*sqrt(log(F))
/(c + d*x))/(15*d) + 4*F**(a + b/(c + d*x)**2)*b**2*(c + d*x)*log
(F)**2/(15*d) + 2*F**(a + b/(c + d*x)**2)*b*(c + d*x)**3*log(F)/(
15*d) + F**(a + b/(c + d*x)**2)*(c + d*x)**5/(5*d)
```

Mathematica [A] time = 0.130982, size = 97, normalized size = 0.71

$$\frac{F^a\left((c+dx)F^{\frac{b}{(c+dx)^2}}\left(4b^2\log^2(F)+2b\log(F)(c+dx)^2+3(c+dx)^4\right)-4\sqrt{\pi}b^{5/2}\log^{\frac{5}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)\right)}{15d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^4,x]
```

```
[Out] (F^a*(-4*b^(5/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)]*
Log[F]^(5/2) + F^(b/(c + d*x)^2)*(c + d*x)*(3*(c + d*x)^4 + 2*b*(
c + d*x)^2*Log[F] + 4*b^2*Log[F]^2)))/(15*d)
```

Maple [B] time = 0.051, size = 324, normalized size = 2.4

$$\frac{F^a d^4 x^5}{5} F^{\frac{b}{(dx+c)^2}} + F^a d^3 F^{\frac{b}{(dx+c)^2}} c x^4 + 2\,F^a d^2 F^{\frac{b}{(dx+c)^2}} c^2 x^3 + 2\,F^a d F^{\frac{b}{(dx+c)^2}} c^3 x^2 + F^a F^{\frac{b}{(dx+c)^2}} c^4 x + \frac{F^a c^5}{5\,d} F^{\frac{b}{(dx+c)^2}} + \frac{2\,F^a d^2 b \ln(F)\, x^3}{15} F^{\frac{b}{(dx+c)^2}} + \frac{2\,F^a d b \ln(F)\, c x^2}{5} F^{\frac{b}{(dx+c)^2}} + \frac{2\,F^a b \ln(F)\, c^2 x}{5} F^{\frac{b}{(dx+c)^2}} + \frac{2\,F^a b \ln(F)\, c^3}{15\,d} F^{\frac{b}{(dx+c)^2}} + \frac{4\,F^a b^2 (\ln(F))^2\, x}{15} F^{\frac{b}{(dx+c)^2}} + \frac{4\,F^a b^2 (\ln(F))^2\, c}{15\,d} F^{\frac{b}{(dx+c)^2}} - \frac{4\,F^a b^3 (\ln(F))^3 \sqrt{\pi}}{15\,d} Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^4,x)
```

```
[Out] 1/5*F^a*d^4*F^(b/(d*x+c)^2)*x^5+F^a*d^3*F^(b/(d*x+c)^2)*c*x^4+2*F
^a*d^2*F^(b/(d*x+c)^2)*c^2*x^3+2*F^a*d*F^(b/(d*x+c)^2)*c^3*x^2+F^
a*F^(b/(d*x+c)^2)*c^4*x+1/5*F^a/d*F^(b/(d*x+c)^2)*c^5+2/15*F^a*d^
2*b*ln(F)*F^(b/(d*x+c)^2)*x^3+2/5*F^a*d*b*ln(F)*F^(b/(d*x+c)^2)*c
*x^2+2/5*F^a*b*ln(F)*F^(b/(d*x+c)^2)*c^2*x+2/15*F^a/d*b*ln(F)*F^(
b/(d*x+c)^2)*c^3+4/15*F^a*b^2*ln(F)^2*F^(b/(d*x+c)^2)*x+4/15*F^a/
d*b^2*ln(F)^2*F^(b/(d*x+c)^2)*c-4/15*F^a/d*b^3*ln(F)^3*Pi^(1/2)/(
-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{15}\left(3\,F^a d^4 x^5 + 15\,F^a c d^3 x^4 + 2\left(15\,F^a c^2 d^2 + F^a b d^2 \log(F)\right)x^3 + 6\left(5\,F^a c^3 d + F^a b c d \log(F)\right)x^2 + \left(15\,F^a c^4 + 6\,F^a b c^2 \log(F)\right.\right.$$
$$+ \int \frac{2\left(4\,F^a b^3 d x \log(F)^3 - 3\,F^a b c^5 \log(F) - 2\,F^a b^2 c^3 \log(F)^2\right) F^{\frac{b}{d^2x^2+2\,cdx+c^2}}}{15\left(d^3x^3 + 3\,cd^2x^2 + 3\,c^2dx + c^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/15*(3*F^a*d^4*x^5 + 15*F^a*c*d^3*x^4 + 2*(15*F^a*c^2*d^2 + F^a*
b*d^2*log(F))*x^3 + 6*(5*F^a*c^3*d + F^a*b*c*d*log(F))*x^2 + (15*
F^a*c^4 + 6*F^a*b*c^2*log(F) + 4*F^a*b^2*log(F)^2)*x)*F^(b/(d^2*x
^2 + 2*c*d*x + c^2)) + integrate(2/15*(4*F^a*b^3*d*x*log(F)^3 - 3
*F^a*b*c^5*log(F) - 2*F^a*b^2*c^3*log(F)^2)*F^(b/(d^2*x^2 + 2*c*d
*x + c^2))/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.255721, size = 297, normalized size = 2.18

$$-\frac{4\sqrt{\pi}F^a b^3 \operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^2}}}{dx+c}\right)\log(F)^3 - \left(3\,d^6x^5 + 15\,cd^5x^4 + 30\,c^2d^4x^3 + 30\,c^3d^3x^2 + 15\,c^4d^2x + 3\,c^5d + 4\left(b^2d^2x + b^2cd\right)\log\right.}{15\,d^2\sqrt{-\frac{b\log(F)}{d^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/15*(4*sqrt(pi)*F^a*b^3*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))*lo
g(F)^3 - (3*d^6*x^5 + 15*c*d^5*x^4 + 30*c^2*d^4*x^3 + 30*c^3*d^3*
x^2 + 15*c^4*d^2*x + 3*c^5*d + 4*(b^2*d^2*x + b^2*c*d)*log(F)^2 +
 2*(b*d^4*x^3 + 3*b*c*d^3*x^2 + 3*b*c^2*d^2*x + b*c^3*d)*log(F))*
F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))
*sqrt(-b*log(F)/d^2))/(d^2*sqrt(-b*log(F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^4 F^{a+\frac{b}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^4*F^(a + b/(d*x + c)^2), x)
```

3.331 $\int F^{a+\frac{b}{(c+dx)^2}}(c+dx)^2\,dx$

Optimal. Leaf size=102

$$-\frac{2\sqrt{\pi}b^{3/2}F^a\log^{\frac{3}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{3d}+\frac{(c+dx)^3F^{a+\frac{b}{(c+dx)^2}}}{3d}+\frac{2b\log(F)(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{3d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^3)/(3*d) + (2*b*F^(a + b/(c + d*
x)^2)*(c + d*x)*Log[F])/(3*d) - (2*b^(3/2)*F^a*Sqrt[Pi]*Erfi[(Sqr
t[b]*Sqrt[Log[F]])/(c + d*x)]*Log[F]^(3/2))/(3*d)
```

Rubi [A] time = 0.191996, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19

$$-\frac{2\sqrt{\pi}b^{3/2}F^a\log^{\frac{3}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{3d}+\frac{(c+dx)^3F^{a+\frac{b}{(c+dx)^2}}}{3d}+\frac{2b\log(F)(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)*(c + d*x)^2,x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x)^3)/(3*d) + (2*b*F^(a + b/(c + d*
x)^2)*(c + d*x)*Log[F])/(3*d) - (2*b^(3/2)*F^a*Sqrt[Pi]*Erfi[(Sqr
t[b]*Sqrt[Log[F]])/(c + d*x)]*Log[F]^(3/2))/(3*d)
```

Rubi in Sympy [A] time = 16.6631, size = 92, normalized size = 0.9

$$-\frac{2\sqrt{\pi}F^ab^{\frac{3}{2}}\log(F)^{\frac{3}{2}}\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{3d}+\frac{2F^{a+\frac{b}{(c+dx)^2}}b(c+dx)\log(F)}{3d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)^3}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**2,x)
```

```
[Out] -2*sqrt(pi)*F**a*b**(3/2)*log(F)**(3/2)*erfi(sqrt(b)*sqrt(log(F))
/(c + d*x))/(3*d) + 2*F**(a + b/(c + d*x)**2)*b*(c + d*x)*log(F)/
(3*d) + F**(a + b/(c + d*x)**2)*(c + d*x)**3/(3*d)
```

Mathematica [A] time = 0.105439, size = 79, normalized size = 0.77

$$\frac{F^a\left((c+dx)F^{\frac{b}{(c+dx)^2}}\left(2b\log(F)+(c+dx)^2\right)-2\sqrt{\pi}b^{3/2}\log^{\frac{3}{2}}(F)\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)*(c + d*x)^2,x]
```

```
[Out] (F^a*(-2*b^(3/2)*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)]*
Log[F]^(3/2) + F^(b/(c + d*x)^2)*(c + d*x)*((c + d*x)^2 + 2*b*Log
[F])))/(3*d)
```

Maple [A] time = 0.041, size = 169, normalized size = 1.7

$$\frac{F^a d^2 x^3}{3} F^{\frac{b}{(dx+c)^2}} + F^a d F^{\frac{b}{(dx+c)^2}} c x^2 + F^a F^{\frac{b}{(dx+c)^2}} c^2 x + \frac{F^a c^3}{3\, d} F^{\frac{b}{(dx+c)^2}} + \frac{2\, F^a b \ln(F)\, x}{3} F^{\frac{b}{(dx+c)^2}} + \frac{2\, F^a b \ln(F)\, c}{3\, d} F^{\frac{b}{(dx+c)^2}} - \frac{2\, F^a b^2 (\ln(F))^2 \sqrt{\pi}}{3\, d} Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)*(d*x+c)^2,x)
```

```
[Out] 1/3*F^a*d^2*F^(b/(d*x+c)^2)*x^3+F^a*d*F^(b/(d*x+c)^2)*c*x^2+F^a*F
^(b/(d*x+c)^2)*c^2*x+1/3*F^a/d*F^(b/(d*x+c)^2)*c^3+2/3*F^a*b*ln(F
)*F^(b/(d*x+c)^2)*x+2/3*F^a/d*b*ln(F)*F^(b/(d*x+c)^2)*c-2/3*F^a/d
*b^2*ln(F)^2*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+
c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\left(F^a d^2 x^3 + 3\, F^a c d x^2 + \left(3\, F^a c^2 + 2\, F^a b \log(F)\right) x\right) F^{\frac{b}{d^2x^2+2\,cdx+c^2}} + \int \frac{2\left(2\, F^a b^2 d x \log(F)^2 - F^a b c^3 \log(F)\right) F^{\frac{b}{d^2x^2+2\,cdx+c^2}}}{3\left(d^3x^3 + 3\, cd^2x^2 + 3\, c^2 dx + c^3\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/3*(F^a*d^2*x^3 + 3*F^a*c*d*x^2 + (3*F^a*c^2 + 2*F^a*b*log(F))*x
)*F^(b/(d^2*x^2 + 2*c*d*x + c^2)) + integrate(2/3*(2*F^a*b^2*d*x*
log(F)^2 - F^a*b*c^3*log(F))*F^(b/(d^2*x^2 + 2*c*d*x + c^2))/(d^3
*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.278927, size = 204, normalized size = 2.

$$-\frac{2\sqrt{\pi} F^a b^2 \operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^2}}}{dx+c}\right)\log(F)^2 - \left(d^4x^3 + 3\, cd^3x^2 + 3\, c^2d^2x + c^3 d + 2\left(bd^2x + bcd\right)\log(F)\right) F^{\frac{ad^2x^2+2\,acdx+ac^2+b}{d^2x^2+2\,cdx+c^2}}\sqrt{-\frac{b\log(F)}{d^2}}}{3\, d^2\sqrt{-\frac{b\log(F)}{d^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/3*(2*sqrt(pi)*F^a*b^2*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))*log
(F)^2 - (d^4*x^3 + 3*c*d^3*x^2 + 3*c^2*d^2*x + c^3*d + 2*(b*d^2*x
 + b*c*d)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2
 + 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/(d^2*sqrt(-b*log(F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)*(d*x+c)**2,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)^2 F^{a + \frac{b}{(dx+c)^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)^2),x, algorithm="giac")

[Out] integrate((d*x + c)^2*F^(a + b/(d*x + c)^2), x)
```

3.332 $\int F^{a+\frac{b}{(c+dx)^2}}\,dx$

Optimal. Leaf size=67

$$\frac{(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{d}-\frac{\sqrt{\pi}\sqrt{b}F^a\sqrt{\log(F)}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{d}$$

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x))/d - (Sqrt[b]*F^a*Sqrt[Pi]*Erfi[
(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)]*Sqrt[Log[F]])/d
```

Rubi [A] time = 0.109484, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{(c+dx)F^{a+\frac{b}{(c+dx)^2}}}{d}-\frac{\sqrt{\pi}\sqrt{b}F^a\sqrt{\log(F)}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2),x]
```

```
[Out] (F^(a + b/(c + d*x)^2)*(c + d*x))/d - (Sqrt[b]*F^a*Sqrt[Pi]*Erfi[
(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)]*Sqrt[Log[F]])/d
```

Rubi in Sympy [A] time = 9.75283, size = 58, normalized size = 0.87

$$-\frac{\sqrt{\pi}F^a\sqrt{b}\sqrt{\log(F)}\,\text{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{d}+\frac{F^{a+\frac{b}{(c+dx)^2}}(c+dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2),x)
```

```
[Out] -sqrt(pi)*F**a*sqrt(b)*sqrt(log(F))*erfi(sqrt(b)*sqrt(log(F))/(c
+ d*x))/d + F**(a + b/(c + d*x)**2)*(c + d*x)/d
```

Mathematica [A] time = 0.041354, size = 63, normalized size = 0.94

$$\frac{F^a\left((c+dx)F^{\frac{b}{(c+dx)^2}}-\sqrt{\pi}\sqrt{b}\sqrt{\log(F)}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2),x]
```

```
[Out] (F^a*(F^(b/(c + d*x)^2)*(c + d*x) - Sqrt[b]*Sqrt[Pi]*Erfi[(Sqrt[b
]*Sqrt[Log[F]])/(c + d*x)]*Sqrt[Log[F]]))/d
```

Maple [A] time = 0.029, size = 74, normalized size = 1.1

$$F^{a}F^{\frac{b}{(dx+c)^{2}}}x+\frac{F^{a}c}{d}F^{\frac{b}{(dx+c)^{2}}}-\frac{F^{a}b\ln(F)\sqrt{\pi}}{d}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2),x)
```

```
[Out] F^a*F^(b/(d*x+c)^2)*x+1/d*F^a*F^(b/(d*x+c)^2)*c-1/d*F^a*b*ln(F)*P
i^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,F^{a}bd\int\frac{F^{\frac{b}{d^{2}x^{2}+2\,cdx+c^{2}}}x}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}\,dx\log(F)+F^{a}F^{\frac{b}{d^{2}x^{2}+2\,cdx+c^{2}}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 2*F^a*b*d*integrate(F^(b/(d^2*x^2 + 2*c*d*x + c^2))*x/(d^3*x^3 +
3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)*log(F) + F^a*F^(b/(d^2*x^2 + 2
*c*d*x + c^2))*x
```

Fricas [A] time = 0.269981, size = 147, normalized size = 2.19

$$-\frac{\sqrt{\pi}F^{a}b\,\mathrm{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^{2}}}}{dx+c}\right)\log(F)-\left(d^{2}x+cd\right)F^{\frac{ad^{2}x^{2}+2\,acdx+ac^{2}+b}{d^{2}x^{2}+2\,cdx+c^{2}}}\sqrt{-\frac{b\log(F)}{d^{2}}}}{d^{2}\sqrt{-\frac{b\log(F)}{d^{2}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -(sqrt(pi)*F^a*b*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))*log(F) - (d
^2*x + c*d)*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c
*d*x + c^2))*sqrt(-b*log(F)/d^2))/(d^2*sqrt(-b*log(F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2),x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^2), x)
```

3.333 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^2}\,dx$

Optimal. Leaf size=46

$$-\frac{\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

```
[Out] -(F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(2*Sqrt[b]
*d*Sqrt[Log[F]])
```

Rubi [A] time = 0.0915427, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^2,x]
```

```
[Out] -(F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(2*Sqrt[b]
*d*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 7.39149, size = 42, normalized size = 0.91

$$-\frac{\sqrt{\pi}F^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**2,x)
```

```
[Out] -sqrt(pi)*F**a*erfi(sqrt(b)*sqrt(log(F))/(c + d*x))/(2*sqrt(b)*d*
sqrt(log(F)))
```

Mathematica [A] time = 0.0130025, size = 46, normalized size = 1.

$$-\frac{\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^2,x]
```

```
[Out] -(F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(2*Sqrt[b]
*d*Sqrt[Log[F]])
```

Maple [A] time = 0.037, size = 35, normalized size = 0.8

$$-\frac{\sqrt{\pi}F^{a}}{2\,d}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^2,x)
```

```
[Out] -1/2/d*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c)
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^2, x)
```

Fricas [A] time = 0.258082, size = 55, normalized size = 1.2

$$-\frac{\sqrt{\pi}F^{a}\operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^2}}}{dx+c}\right)}{2\,d^2\sqrt{-\frac{b\log(F)}{d^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(pi)*F^a*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))/(d^2*sqrt(
-b*log(F)/d^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^2, x)
```

3.334 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^4} dx$

Optimal. Leaf size=81

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{4b^{3/2}d\log^{\frac{3}{2}}(F)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)}$$

```
[Out] (F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(4*b^(3/2)*
d*Log[F]^(3/2)) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)*Log[F])
```

Rubi [A] time = 0.170348, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{4b^{3/2}d\log^{\frac{3}{2}}(F)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^4,x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(4*b^(3/2)*
d*Log[F]^(3/2)) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)*Log[F])
```

Rubi in Sympy [A] time = 13.7481, size = 66, normalized size = 0.81

$$\frac{\sqrt{\pi}F^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{4b^{\frac{3}{2}}d\log(F)^{\frac{3}{2}}}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd(c+dx)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**4,x)
```

```
[Out] sqrt(pi)*F**a*erfi(sqrt(b)*sqrt(log(F))/(c + d*x))/(4*b**(3/2)*d*
log(F)**(3/2)) - F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)*log(F))
```

Mathematica [A] time = 0.068996, size = 81, normalized size = 1.

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{4b^{3/2}d\log^{\frac{3}{2}}(F)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^4,x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(4*b^(3/2)*
d*Log[F]^(3/2)) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)*Log[F])
```

Maple [A] time = 0.065, size = 76, normalized size = 0.9

$$-\frac{F^{a}}{2\,(dx+c)\,db\ln(F)}F^{\frac{b}{(dx+c)^{2}}}+\frac{F^{a}\sqrt{\pi}}{4\ln(F)\,bd}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^4,x)
```

```
[Out] -1/2/d*F^a*F^(b/(d*x+c)^2)/(d*x+c)/b/ln(F)+1/4/d*F^a/b/ln(F)*Pi^(
1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{a+\frac{b}{(dx+c)^{2}}}}{(dx+c)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^4, x)
```

Fricas [A] time = 0.272586, size = 161, normalized size = 1.99

$$\frac{\sqrt{\pi}(dx+c)F^{a}\operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^{2}}}}{dx+c}\right)-2\,F^{\frac{ad^{2}x^{2}+2\,acdx+ac^{2}+b}{d^{2}x^{2}+2\,cdx+c^{2}}}d\sqrt{-\frac{b\log(F)}{d^{2}}}}{4\,(bd^{3}x+bcd^{2})\sqrt{-\frac{b\log(F)}{d^{2}}}\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(sqrt(pi)*(d*x + c)*F^a*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c))
- 2*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c
^2))*d*sqrt(-b*log(F)/d^2))/((b*d^3*x + b*c*d^2)*sqrt(-b*log(F)/d
^2)*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{a+\frac{b}{(dx+c)^{2}}}}{(dx+c)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^4, x)
```

3.335 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^6} \, dx$

Optimal. Leaf size=115

$$-\frac{3\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{8b^{5/2}d\log^{\frac{5}{2}}(F)}+\frac{3F^{a+\frac{b}{(c+dx)^2}}}{4b^2d\log^2(F)(c+dx)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^3}$$

```
[Out] (-3*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(8*b^(5/
2)*d*Log[F]^(5/2)) + (3*F^(a + b/(c + d*x)^2))/(4*b^2*d*(c + d*x)
*Log[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)^3*Log[F])
```

Rubi [A] time = 0.253556, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{3\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{8b^{5/2}d\log^{\frac{5}{2}}(F)}+\frac{3F^{a+\frac{b}{(c+dx)^2}}}{4b^2d\log^2(F)(c+dx)}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^6,x]
```

```
[Out] (-3*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(8*b^(5/
2)*d*Log[F]^(5/2)) + (3*F^(a + b/(c + d*x)^2))/(4*b^2*d*(c + d*x)
*Log[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)^3*Log[F])
```

Rubi in Sympy [A] time = 22.11, size = 100, normalized size = 0.87

$$-\frac{3\sqrt{\pi}F^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{8b^{\frac{5}{2}}d\log(F)^{\frac{5}{2}}}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd(c+dx)^3\log(F)}+\frac{3F^{a+\frac{b}{(c+dx)^2}}}{4b^2d(c+dx)\log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**6,x)
```

```
[Out] -3*sqrt(pi)*F**a*erfi(sqrt(b)*sqrt(log(F))/(c + d*x))/(8*b**(5/2)
*d*log(F)**(5/2)) - F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)**3*l
og(F)) + 3*F**(a + b/(c + d*x)**2)/(4*b**2*d*(c + d*x)*log(F)**2)
```

Mathematica [A] time = 0.216159, size = 93, normalized size = 0.81

$$\frac{\frac{2F^{a+\frac{b}{(c+dx)^2}}(3(c+dx)^2-2b\log(F))}{b^2\log^2(F)(c+dx)^3}-\frac{3\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{b^{5/2}\log^{\frac{5}{2}}(F)}}{8d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^6,x]
```

```
[Out] ((-3*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(b^(5/2
)*Log[F]^(5/2)) + (2*F^(a + b/(c + d*x)^2)*(3*(c + d*x)^2 - 2*b*L
```

```
og[F]))/(b^2*(c + d*x)^3*Log[F]^2))/(8*d)
```

Maple [A] time = 0.101, size = 109, normalized size = 1.

$$-\frac{F^{a}}{2\,d\,(dx+c)^{3}\,b\ln(F)}F^{\frac{b}{(dx+c)^{2}}}+\frac{3\,F^{a}}{4\,(\ln(F))^{2}\,b^{2}d\,(dx+c)}F^{\frac{b}{(dx+c)^{2}}}-\frac{3\,F^{a}\sqrt{\pi}}{8\,(\ln(F))^{2}\,b^{2}d}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^6,x)
```

```
[Out] -1/2*F^a/d*F^(b/(d*x+c)^2)/(d*x+c)^3/b/ln(F)+3/4*F^a/d/b^2/ln(F)^
2*F^(b/(d*x+c)^2)/(d*x+c)-3/8*F^a/d/b^2/ln(F)^2*Pi^(1/2)/(-b*ln(F
))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{a+\frac{b}{(dx+c)^{2}}}}{(dx+c)^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^6,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^6, x)
```

Fricas [A] time = 0.286386, size = 271, normalized size = 2.36

$$-\frac{3\,\sqrt{\pi}\left(d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}\right)F^{a}\,\mathrm{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^{2}}}}{dx+c}\right)-2\left(3\,d^{3}x^{2}+6\,cd^{2}x+3\,c^{2}d-2\,bd\log(F)\right)F^{\frac{ad^{2}x^{2}+2\,acdx+ac^{2}+b}{d^{2}x^{2}+2\,cdx+c^{2}}}\sqrt{-\frac{b\log(F)}{d^{2}}}}{8\left(b^{2}d^{5}x^{3}+3\,b^{2}cd^{4}x^{2}+3\,b^{2}c^{2}d^{3}x+b^{2}c^{3}d^{2}\right)\sqrt{-\frac{b\log(F)}{d^{2}}}\log(F)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^6,x, algorithm="fricas")
```

```
[Out] -1/8*(3*sqrt(pi)*(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*F^a*er
f(d*sqrt(-b*log(F)/d^2)/(d*x + c)) - 2*(3*d^3*x^2 + 6*c*d^2*x + 3
*c^2*d - 2*b*d*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^
2*x^2 + 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/((b^2*d^5*x^3 + 3*b^
2*c*d^4*x^2 + 3*b^2*c^2*d^3*x + b^2*c^3*d^2)*sqrt(-b*log(F)/d^2)*
log(F)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**6,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^6,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^6, x)
```

3.336 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^8}\,dx$

Optimal. Leaf size=149

$$\frac{15\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{16b^{7/2}d\log^{\frac{7}{2}}(F)}-\frac{15F^{a+\frac{b}{(c+dx)^2}}}{8b^3d\log^3(F)(c+dx)}+\frac{5F^{a+\frac{b}{(c+dx)^2}}}{4b^2d\log^2(F)(c+dx)^3}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^5}$$

```
[Out] (15*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(16*b^(7
/2)*d*Log[F]^(7/2)) - (15*F^(a + b/(c + d*x)^2))/(8*b^3*d*(c + d*
x)*Log[F]^3) + (5*F^(a + b/(c + d*x)^2))/(4*b^2*d*(c + d*x)^3*Log
[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)^5*Log[F])
```

Rubi [A] time = 0.34697, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{15\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{16b^{7/2}d\log^{\frac{7}{2}}(F)}-\frac{15F^{a+\frac{b}{(c+dx)^2}}}{8b^3d\log^3(F)(c+dx)}+\frac{5F^{a+\frac{b}{(c+dx)^2}}}{4b^2d\log^2(F)(c+dx)^3}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^8,x]
```

```
[Out] (15*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(16*b^(7
/2)*d*Log[F]^(7/2)) - (15*F^(a + b/(c + d*x)^2))/(8*b^3*d*(c + d*
x)*Log[F]^3) + (5*F^(a + b/(c + d*x)^2))/(4*b^2*d*(c + d*x)^3*Log
[F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)^5*Log[F])
```

Rubi in Sympy [A] time = 32.0898, size = 133, normalized size = 0.89

$$\frac{15\sqrt{\pi}F^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{16b^{\frac{7}{2}}d\log(F)^{\frac{7}{2}}}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd(c+dx)^5\log(F)}+\frac{5F^{a+\frac{b}{(c+dx)^2}}}{4b^2d(c+dx)^3\log(F)^2}-\frac{15F^{a+\frac{b}{(c+dx)^2}}}{8b^3d(c+dx)\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**8,x)
```

```
[Out] 15*sqrt(pi)*F**a*erfi(sqrt(b)*sqrt(log(F))/(c + d*x))/(16*b**(7/2
)*d*log(F)**(7/2)) - F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)**5*
log(F)) + 5*F**(a + b/(c + d*x)**2)/(4*b**2*d*(c + d*x)**3*log(F)
**2) - 15*F**(a + b/(c + d*x)**2)/(8*b**3*d*(c + d*x)*log(F)**3)
```

Mathematica [A] time = 0.139415, size = 111, normalized size = 0.74

$$\frac{F^a\left(15\sqrt{\pi}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)-\frac{2\sqrt{b}\sqrt{\log(F)}F^{\frac{b}{(c+dx)^2}}\left(4b^2\log^2(F)-10b\log(F)(c+dx)^2+15(c+dx)^4\right)}{(c+dx)^5}\right)}{16b^{7/2}d\log^{\frac{7}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]   Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^8,x]
```

```
[Out] (F^a*(15*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)] - (2*Sqr
t[b]*F^(b/(c + d*x)^2)*Sqrt[Log[F]]*(15*(c + d*x)^4 - 10*b*(c + d
*x)^2*Log[F] + 4*b^2*Log[F]^2))/(c + d*x)^5))/(16*b^(7/2)*d*Log[F
]^(7/2))
```

Maple [A]   time = 0.144, size = 142, normalized size = 1.

$$-\frac{F^{a}}{2\,d\,(dx+c)^{5}\,b\ln(F)}F^{\frac{b}{(dx+c)^2}}+\frac{5\,F^{a}}{4\,(\ln(F))^{2}\,b^{2}d\,(dx+c)^{3}}F^{\frac{b}{(dx+c)^2}}-\frac{15\,F^{a}}{8\,db^{3}\,(\ln(F))^{3}\,(dx+c)}F^{\frac{b}{(dx+c)^2}}+\frac{15\,F^{a}\sqrt{\pi}}{16\,db^{3}\,(\ln(F))^{3}}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b/(d*x+c)^2)/(d*x+c)^8,x)
```

```
[Out] -1/2*F^a/d*F^(b/(d*x+c)^2)/(d*x+c)^5/b/ln(F)+5/4*F^a/d/b^2/ln(F)^
2*F^(b/(d*x+c)^2)/(d*x+c)^3-15/8*F^a/d/b^3/ln(F)^3*F^(b/(d*x+c)^2
)/(d*x+c)+15/16*F^a/d/b^3/ln(F)^3*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((
-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{8}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^8, x)
```

Fricas [A]   time = 0.304159, size = 410, normalized size = 2.75

$$\frac{15\sqrt{\pi}\left(d^{5}x^{5}+5\,cd^{4}x^{4}+10\,c^{2}d^{3}x^{3}+10\,c^{3}d^{2}x^{2}+5\,c^{4}dx+c^{5}\right)F^{a}\operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^2}}}{dx+c}\right)-2\left(15\,d^{5}x^{4}+60\,cd^{4}x^{3}+90\,c^{2}d^{3}x^{2}+60\,c^{3}\right.}{16\left(b^{3}d^{7}x^{5}+5\,b^{3}cd^{6}x^{4}+10\,b^{3}c^{2}d^{5}x^{3}+10\,b^{3}c^{3}d^{4}x^{2}+5\,b^{3}c^{4}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] 1/16*(15*sqrt(pi)*(d^5*x^5 + 5*c*d^4*x^4 + 10*c^2*d^3*x^3 + 10*c^
3*d^2*x^2 + 5*c^4*d*x + c^5)*F^a*erf(d*sqrt(-b*log(F)/d^2)/(d*x +
 c)) - 2*(15*d^5*x^4 + 60*c*d^4*x^3 + 90*c^2*d^3*x^2 + 60*c^3*d^2
*x + 15*c^4*d + 4*b^2*d*log(F)^2 - 10*(b*d^3*x^2 + 2*b*c*d^2*x +
b*c^2*d)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2
+ 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/((b^3*d^7*x^5 + 5*b^3*c*d^
6*x^4 + 10*b^3*c^2*d^5*x^3 + 10*b^3*c^3*d^4*x^2 + 5*b^3*c^4*d^3*x
 + b^3*c^5*d^2)*sqrt(-b*log(F)/d^2)*log(F)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^8, x)
```

3.337 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^{10}}\,dx$

Optimal. Leaf size=183

$$-\frac{105\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{32b^{9/2}d\log^{\frac{9}{2}}(F)}+\frac{105F^{a+\frac{b}{(c+dx)^2}}}{16b^4d\log^4(F)(c+dx)}-\frac{35F^{a+\frac{b}{(c+dx)^2}}}{8b^3d\log^3(F)(c+dx)^3}+\frac{7F^{a+\frac{b}{(c+dx)^2}}}{4b^2d\log^2(F)(c+dx)^5}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^7}$$

```
[Out] (-105*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(32*b^
(9/2)*d*Log[F]^(9/2)) + (105*F^(a + b/(c + d*x)^2))/(16*b^4*d*(c
+ d*x)*Log[F]^4) - (35*F^(a + b/(c + d*x)^2))/(8*b^3*d*(c + d*x)^
3*Log[F]^3) + (7*F^(a + b/(c + d*x)^2))/(4*b^2*d*(c + d*x)^5*Log[
F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)^7*Log[F])
```

Rubi [A] time = 0.438499, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{105\sqrt{\pi}F^a\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{32b^{9/2}d\log^{\frac{9}{2}}(F)}+\frac{105F^{a+\frac{b}{(c+dx)^2}}}{16b^4d\log^4(F)(c+dx)}-\frac{35F^{a+\frac{b}{(c+dx)^2}}}{8b^3d\log^3(F)(c+dx)^3}+\frac{7F^{a+\frac{b}{(c+dx)^2}}}{4b^2d\log^2(F)(c+dx)^5}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd\log(F)(c+dx)^7}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^10,x]
```

```
[Out] (-105*F^a*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)])/(32*b^
(9/2)*d*Log[F]^(9/2)) + (105*F^(a + b/(c + d*x)^2))/(16*b^4*d*(c
+ d*x)*Log[F]^4) - (35*F^(a + b/(c + d*x)^2))/(8*b^3*d*(c + d*x)^
3*Log[F]^3) + (7*F^(a + b/(c + d*x)^2))/(4*b^2*d*(c + d*x)^5*Log[
F]^2) - F^(a + b/(c + d*x)^2)/(2*b*d*(c + d*x)^7*Log[F])
```

Rubi in Sympy [A] time = 44.2207, size = 165, normalized size = 0.9

$$-\frac{105\sqrt{\pi}F^a\operatorname{erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)}{32b^{\frac{9}{2}}d\log(F)^{\frac{9}{2}}}-\frac{F^{a+\frac{b}{(c+dx)^2}}}{2bd(c+dx)^7\log(F)}+\frac{7F^{a+\frac{b}{(c+dx)^2}}}{4b^2d(c+dx)^5\log(F)^2}-\frac{35F^{a+\frac{b}{(c+dx)^2}}}{8b^3d(c+dx)^3\log(F)^3}+\frac{105F^{a+\frac{b}{(c+dx)^2}}}{16b^4d(c+dx)\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**10,x)
```

```
[Out] -105*sqrt(pi)*F**a*erfi(sqrt(b)*sqrt(log(F))/(c + d*x))/(32*b**(9
/2)*d*log(F)**(9/2)) - F**(a + b/(c + d*x)**2)/(2*b*d*(c + d*x)**
7*log(F)) + 7*F**(a + b/(c + d*x)**2)/(4*b**2*d*(c + d*x)**5*log(
F)**2) - 35*F**(a + b/(c + d*x)**2)/(8*b**3*d*(c + d*x)**3*log(F)
**3) + 105*F**(a + b/(c + d*x)**2)/(16*b**4*d*(c + d*x)*log(F)**4
)
```

Mathematica [A] time = 0.185695, size = 127, normalized size = 0.69

$$\frac{F^a\left(\frac{2\sqrt{b}\sqrt{\log(F)}F^{\frac{b}{(c+dx)^2}}\left(-8b^3\log^3(F)+28b^2\log^2(F)(c+dx)^2-70b\log(F)(c+dx)^4+105(c+dx)^6\right)}{(c+dx)^7}-105\sqrt{\pi}\operatorname{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)\right)}{32b^{9/2}d\log^{\frac{9}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^10,x]
```

```
[Out] (F^a*(-105*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)] + (2*S
qrt[b]*F^(b/(c + d*x)^2)*Sqrt[Log[F]]*(105*(c + d*x)^6 - 70*b*(c
+ d*x)^4*Log[F] + 28*b^2*(c + d*x)^2*Log[F]^2 - 8*b^3*Log[F]^3))/
(c + d*x)^7))/(32*b^(9/2)*d*Log[F]^(9/2))
```

Maple [A] time = 0.197, size = 175, normalized size = 1.

$$-\frac{F^a}{2\,d\,(dx+c)^7\,b\ln(F)}F^{\frac{b}{(dx+c)^2}}+\frac{7\,F^a}{4\,(\ln(F))^2\,b^2d\,(dx+c)^5}F^{\frac{b}{(dx+c)^2}}-\frac{35\,F^a}{8\,db^3\,(\ln(F))^3\,(dx+c)^3}F^{\frac{b}{(dx+c)^2}}+\frac{105\,F^a}{16\,db^4\,(\ln(F))^4\,(dx+c)}F^{\frac{b}{(dx+c)^2}}-\frac{105\,F^a\sqrt{\pi}}{32\,db^4\,(\ln(F))^4}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^10,x)
```

```
[Out] -1/2*F^a/d*F^(b/(d*x+c)^2)/(d*x+c)^7/b/ln(F)+7/4*F^a/d/b^2/ln(F)^
2*F^(b/(d*x+c)^2)/(d*x+c)^5-35/8*F^a/d/b^3/ln(F)^3*F^(b/(d*x+c)^2
)/(d*x+c)^3+105/16*F^a/d/b^4/ln(F)^4*F^(b/(d*x+c)^2)/(d*x+c)-105/
32*F^a/d/b^4/ln(F)^4*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/
2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^10, x)
```

Fricas [A] time = 0.286014, size = 587, normalized size = 3.21

$$-\frac{105\sqrt{\pi}\left(d^7x^7+7\,cd^6x^6+21\,c^2d^5x^5+35\,c^3d^4x^4+35\,c^4d^3x^3+21\,c^5d^2x^2+7\,c^6dx+c^7\right)F^a\operatorname{erf}\left(\frac{d\sqrt{-\frac{b\log(F)}{d^2}}}{dx+c}\right)-2\left(105\,d^7x^6+\cdots\right.}{32\left(b^4d^9\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] -1/32*(105*sqrt(pi)*(d^7*x^7 + 7*c*d^6*x^6 + 21*c^2*d^5*x^5 + 35*
c^3*d^4*x^4 + 35*c^4*d^3*x^3 + 21*c^5*d^2*x^2 + 7*c^6*d*x + c^7)*
F^a*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c)) - 2*(105*d^7*x^6 + 630*c
*d^6*x^5 + 1575*c^2*d^5*x^4 + 2100*c^3*d^4*x^3 + 1575*c^4*d^3*x^2
 + 630*c^5*d^2*x + 105*c^6*d - 8*b^3*d*log(F)^3 + 28*(b^2*d^3*x^2
 + 2*b^2*c*d^2*x + b^2*c^2*d)*log(F)^2 - 70*(b*d^5*x^4 + 4*b*c*d^
4*x^3 + 6*b*c^2*d^3*x^2 + 4*b*c^3*d^2*x + b*c^4*d)*log(F))*F^((a*
d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))*sqrt(
-b*log(F)/d^2))/((b^4*d^9*x^7 + 7*b^4*c*d^8*x^6 + 21*b^4*c^2*d^7*
x^5 + 35*b^4*c^3*d^6*x^4 + 35*b^4*c^4*d^5*x^3 + 21*b^4*c^5*d^4*x^
2 + 7*b^4*c^6*d^3*x + b^4*c^7*d^2)*sqrt(-b*log(F)/d^2)*log(F)^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^10,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^10, x)
```

3.338 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^{12}}\,dx$

Optimal. Leaf size=49

$$\frac{F^a \text{Gamma}\left(\frac{11}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d(c+dx)^{11}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{11/2}}$$

```
[Out] (F^a*Gamma[11/2, -((b*Log[F])/(c + d*x)^2)])/(2*d*(c + d*x)^11*(-
((b*Log[F])/(c + d*x)^2))^(11/2))
```

Rubi [A] time = 0.0731344, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a \text{Gamma}\left(\frac{11}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d(c+dx)^{11}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^12,x]
```

```
[Out] (F^a*Gamma[11/2, -((b*Log[F])/(c + d*x)^2)])/(2*d*(c + d*x)^11*(-
((b*Log[F])/(c + d*x)^2))^(11/2))
```

Rubi in Sympy [A] time = 5.88058, size = 46, normalized size = 0.94

$$\frac{F^a\left(\frac{11}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{11}{2}}(c+dx)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**12,x)
```

```
[Out] F**a*Gamma(11/2, -b*log(F)/(c + d*x)**2)/(2*d*(-b*log(F)/(c + d*x
)**2)**(11/2)*(c + d*x)**11)
```

Mathematica [B] time = 0.261945, size = 143, normalized size = 2.92

$$\frac{F^a\left(945\sqrt{\pi}\text{Erfi}\left(\frac{\sqrt{b}\sqrt{\log(F)}}{c+dx}\right)-\frac{2\sqrt{b}\sqrt{\log(F)}F^{\frac{b}{(c+dx)^2}}\left(16b^4\log^4(F)-72b^3\log^3(F)(c+dx)^2+252b^2\log^2(F)(c+dx)^4-630b\log(F)(c+dx)^6+945(c+dx)^8\right)}{(c+dx)^9}\right)}{64b^{11/2}d\log^{\frac{11}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^12,x]
```

```
[Out] (F^a*(945*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)] - (2*Sq
rt[b]*F^(b/(c + d*x)^2)*Sqrt[Log[F]]*(945*(c + d*x)^8 - 630*b*(c
+ d*x)^6*Log[F] + 252*b^2*(c + d*x)^4*Log[F]^2 - 72*b^3*(c + d*x)
```

```
^2*Log[F]^3 + 16*b^4*Log[F]^4))/(c + d*x)^9))/(64*b^(11/2)*d*Log[
F]^(11/2))
```

Maple [A] time = 0.273, size = 208, normalized size = 4.2

$$-\frac{F^{a}}{2\,d\,(dx+c)^{9}\,b\ln(F)}F^{\frac{b}{(dx+c)^{2}}}+\frac{9\,F^{a}}{4\,(\ln(F))^{2}\,b^{2}d\,(dx+c)^{7}}F^{\frac{b}{(dx+c)^{2}}}-\frac{63\,F^{a}}{8\,db^{3}\,(\ln(F))^{3}\,(dx+c)^{5}}F^{\frac{b}{(dx+c)^{2}}}+\frac{315\,F^{a}}{16\,db^{4}\,(\ln(F))^{4}\,(dx+c)^{3}}F^{\frac{b}{(dx+c)^{2}}}-\frac{945\,F^{a}}{32\,d\,(\ln(F))^{5}\,b^{5}\,(dx+c)}F^{\frac{b}{(dx+c)^{2}}}+\frac{945\,F^{a}\sqrt{\pi}}{64\,d\,(\ln(F))^{5}\,b^{5}}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^12,x)
```

```
[Out] -1/2*F^a/d*F^(b/(d*x+c)^2)/(d*x+c)^9/b/ln(F)+9/4*F^a/d/b^2/ln(F)^
2*F^(b/(d*x+c)^2)/(d*x+c)^7-63/8*F^a/d/b^3/ln(F)^3*F^(b/(d*x+c)^2
)/(d*x+c)^5+315/16*F^a/d/b^4/ln(F)^4*F^(b/(d*x+c)^2)/(d*x+c)^3-94
5/32*F^a/d/b^5/ln(F)^5*F^(b/(d*x+c)^2)/(d*x+c)+945/64*F^a/d/b^5/l
n(F)^5*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{a+\frac{b}{(dx+c)^{2}}}}{(dx+c)^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^12,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^12, x)
```

Fricas [A] time = 0.328638, size = 802, normalized size = 16.37

$$945\sqrt{\pi}\left(d^{9}x^{9}+9\,cd^{8}x^{8}+36\,c^{2}d^{7}x^{7}+84\,c^{3}d^{6}x^{6}+126\,c^{4}d^{5}x^{5}+126\,c^{5}d^{4}x^{4}+84\,c^{6}d^{3}x^{3}+36\,c^{7}d^{2}x^{2}+9\,c^{8}dx+c^{9}\right)F^{a}\operatorname{erf}\left(\frac{d\sqrt{}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^12,x, algorithm="fricas")
```

```
[Out] 1/64*(945*sqrt(pi)*(d^9*x^9 + 9*c*d^8*x^8 + 36*c^2*d^7*x^7 + 84*c
^3*d^6*x^6 + 126*c^4*d^5*x^5 + 126*c^5*d^4*x^4 + 84*c^6*d^3*x^3 +
 36*c^7*d^2*x^2 + 9*c^8*d*x + c^9)*F^a*erf(d*sqrt(-b*log(F)/d^2)/
(d*x + c)) - 2*(945*d^9*x^8 + 7560*c*d^8*x^7 + 26460*c^2*d^7*x^6
+ 52920*c^3*d^6*x^5 + 66150*c^4*d^5*x^4 + 52920*c^5*d^4*x^3 + 264
60*c^6*d^3*x^2 + 7560*c^7*d^2*x + 945*c^8*d + 16*b^4*d*log(F)^4 -
 72*(b^3*d^3*x^2 + 2*b^3*c*d^2*x + b^3*c^2*d)*log(F)^3 + 252*(b^2
*d^5*x^4 + 4*b^2*c*d^4*x^3 + 6*b^2*c^2*d^3*x^2 + 4*b^2*c^3*d^2*x
+ b^2*c^4*d)*log(F)^2 - 630*(b*d^7*x^6 + 6*b*c*d^6*x^5 + 15*b*c^2
*d^5*x^4 + 20*b*c^3*d^4*x^3 + 15*b*c^4*d^3*x^2 + 6*b*c^5*d^2*x +
b*c^6*d)*log(F))*F^((a*d^2*x^2 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2
```

```
+ 2*c*d*x + c^2))*sqrt(-b*log(F)/d^2))/((b^5*d^11*x^9 + 9*b^5*c*d
^10*x^8 + 36*b^5*c^2*d^9*x^7 + 84*b^5*c^3*d^8*x^6 + 126*b^5*c^4*d
^7*x^5 + 126*b^5*c^5*d^6*x^4 + 84*b^5*c^6*d^5*x^3 + 36*b^5*c^7*d^
4*x^2 + 9*b^5*c^8*d^3*x + b^5*c^9*d^2)*sqrt(-b*log(F)/d^2)*log(F)
^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**12,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^12,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^12, x)
```

3.339 $\int \frac{F^{a+\frac{b}{(c+dx)^2}}}{(c+dx)^{14}}\,dx$

Optimal. Leaf size=49

$$\frac{F^a\text{Gamma}\left(\frac{13}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d(c+dx)^{13}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{13/2}}$$

```
[Out] (F^a*Gamma[13/2, -((b*Log[F])/(c + d*x)^2)])/(2*d*(c + d*x)^13*(-
((b*Log[F])/(c + d*x)^2))^(13/2))
```

Rubi [A] time = 0.0745951, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(\frac{13}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d(c+dx)^{13}\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^2)/(c + d*x)^14,x]
```

```
[Out] (F^a*Gamma[13/2, -((b*Log[F])/(c + d*x)^2)])/(2*d*(c + d*x)^13*(-
((b*Log[F])/(c + d*x)^2))^(13/2))
```

Rubi in Sympy [A] time = 5.92842, size = 46, normalized size = 0.94

$$\frac{F^a\left(\frac{13}{2},-\frac{b\log(F)}{(c+dx)^2}\right)}{2d\left(-\frac{b\log(F)}{(c+dx)^2}\right)^{\frac{13}{2}}(c+dx)^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**14,x)
```

```
[Out] F**a*Gamma(13/2, -b*log(F)/(c + d*x)**2)/(2*d*(-b*log(F)/(c + d*x
)**2)**(13/2)*(c + d*x)**13)
```

Mathematica [B] time = 0.326769, size = 159, normalized size = 3.24

$$\frac{F^a\left(\frac{2\sqrt{b}\sqrt{\log(F)}F^{\frac{b}{(c+dx)^2}}\left(-32b^5\log^5(F)+176b^4\log^4(F)(c+dx)^2-792b^3\log^3(F)(c+dx)^4+2772b^2\log^2(F)(c+dx)^6-6930b\log(F)(c+dx)^8+10395(c+dx)^{10}\right)}{(c+dx)^{11}}-103\right.}{128b^{13/2}d\log^{\frac{13}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^2)/(c + d*x)^14,x]
```

```
[Out] (F^a*(-10395*Sqrt[Pi]*Erfi[(Sqrt[b]*Sqrt[Log[F]])/(c + d*x)] + (2
*Sqrt[b]*F^(b/(c + d*x)^2)*Sqrt[Log[F]]*(10395*(c + d*x)^10 - 693
0*b*(c + d*x)^8*Log[F] + 2772*b^2*(c + d*x)^6*Log[F]^2 - 792*b^3*
```

```
(c + d*x)^4*Log[F]^3 + 176*b^4*(c + d*x)^2*Log[F]^4 - 32*b^5*Log[
F]^5))/(c + d*x)^11))/(128*b^(13/2)*d*Log[F]^(13/2))
```

Maple [A] time = 0.347, size = 241, normalized size = 4.9

$$-\frac{F^{a}}{2\,d\,(dx+c)^{11}\,b\ln(F)}F^{\frac{b}{(dx+c)^2}}+\frac{11\,F^{a}}{4\,(\ln(F))^2\,b^2d\,(dx+c)^9}F^{\frac{b}{(dx+c)^2}}-\frac{99\,F^{a}}{8\,db^3\,(\ln(F))^3\,(dx+c)^7}F^{\frac{b}{(dx+c)^2}}+\frac{693\,F^{a}}{16\,db^4\,(\ln(F))^4\,(dx+c)^5}F^{\frac{b}{(dx+c)^2}}-\frac{3465\,F^{a}}{32\,d\,(\ln(F))^5\,b^5\,(dx+c)^3}F^{\frac{b}{(dx+c)^2}}+\frac{10395\,F^{a}}{64\,d\,(\ln(F))^6\,b^6\,(dx+c)}F^{\frac{b}{(dx+c)^2}}-\frac{10395\,F^{a}\sqrt{\pi}}{128\,d\,(\ln(F))^6\,b^6}Erf\left(\frac{1}{dx+c}\sqrt{-b\ln(F)}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^2)/(d*x+c)^14,x)
```

```
[Out] -1/2*F^a/d*F^(b/(d*x+c)^2)/(d*x+c)^11/b/ln(F)+11/4*F^a/d/b^2/ln(F
)^2*F^(b/(d*x+c)^2)/(d*x+c)^9-99/8*F^a/d/b^3/ln(F)^3*F^(b/(d*x+c)
^2)/(d*x+c)^7+693/16*F^a/d/b^4/ln(F)^4*F^(b/(d*x+c)^2)/(d*x+c)^5-
3465/32*F^a/d/b^5/ln(F)^5*F^(b/(d*x+c)^2)/(d*x+c)^3+10395/64*F^a/
d/b^6/ln(F)^6*F^(b/(d*x+c)^2)/(d*x+c)-10395/128*F^a/d/b^6/ln(F)^6
*Pi^(1/2)/(-b*ln(F))^(1/2)*erf((-b*ln(F))^(1/2)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{14}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^14,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^14, x)
```

Fricas [A] time = 0.339537, size = 1054, normalized size = 21.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^14,x, algorithm="fricas")
```

```
[Out] -1/128*(10395*sqrt(pi)*(d^11*x^11 + 11*c*d^10*x^10 + 55*c^2*d^9*x
^9 + 165*c^3*d^8*x^8 + 330*c^4*d^7*x^7 + 462*c^5*d^6*x^6 + 462*c^
6*d^5*x^5 + 330*c^7*d^4*x^4 + 165*c^8*d^3*x^3 + 55*c^9*d^2*x^2 +
11*c^10*d*x + c^11)*F^a*erf(d*sqrt(-b*log(F)/d^2)/(d*x + c)) - 2*
(10395*d^11*x^10 + 103950*c*d^10*x^9 + 467775*c^2*d^9*x^8 + 12474
00*c^3*d^8*x^7 + 2182950*c^4*d^7*x^6 + 2619540*c^5*d^6*x^5 + 2182
950*c^6*d^5*x^4 + 1247400*c^7*d^4*x^3 + 467775*c^8*d^3*x^2 + 1039
50*c^9*d^2*x + 10395*c^10*d - 32*b^5*d*log(F)^5 + 176*(b^4*d^3*x^
2 + 2*b^4*c*d^2*x + b^4*c^2*d)*log(F)^4 - 792*(b^3*d^5*x^4 + 4*b^
3*c*d^4*x^3 + 6*b^3*c^2*d^3*x^2 + 4*b^3*c^3*d^2*x + b^3*c^4*d)*lo
g(F)^3 + 2772*(b^2*d^7*x^6 + 6*b^2*c*d^6*x^5 + 15*b^2*c^2*d^5*x^4
 + 20*b^2*c^3*d^4*x^3 + 15*b^2*c^4*d^3*x^2 + 6*b^2*c^5*d^2*x + b^
2*c^6*d)*log(F)^2 - 6930*(b*d^9*x^8 + 8*b*c*d^8*x^7 + 28*b*c^2*d^
7*x^6 + 56*b*c^3*d^6*x^5 + 70*b*c^4*d^5*x^4 + 56*b*c^5*d^4*x^3 +
```

```
28*b*c^6*d^3*x^2 + 8*b*c^7*d^2*x + b*c^8*d)*log(F))*F^((a*d^2*x^2
 + 2*a*c*d*x + a*c^2 + b)/(d^2*x^2 + 2*c*d*x + c^2))*sqrt(-b*log(
F)/d^2))/((b^6*d^13*x^11 + 11*b^6*c*d^12*x^10 + 55*b^6*c^2*d^11*x
^9 + 165*b^6*c^3*d^10*x^8 + 330*b^6*c^4*d^9*x^7 + 462*b^6*c^5*d^8
*x^6 + 462*b^6*c^6*d^7*x^5 + 330*b^6*c^7*d^6*x^4 + 165*b^6*c^8*d^
5*x^3 + 55*b^6*c^9*d^4*x^2 + 11*b^6*c^10*d^3*x + b^6*c^11*d^2)*sq
rt(-b*log(F)/d^2)*log(F)^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**2)/(d*x+c)**14,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^2}}}{(dx+c)^{14}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^14,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^2)/(d*x + c)^14, x)
```

3.340 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^m\,dx$

Optimal. Leaf size=61

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{m+1}{3}}\text{Gamma}\left(\frac{1}{3}(-m-1),-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[(-1 - m)/3, -((b*Log[F])/(c + d*x)^3
)]*(-((b*Log[F])/(c + d*x)^3))^((1 + m)/3))/(3*d)
```

Rubi [A] time = 0.0764817, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{m+1}{3}}\text{Gamma}\left(\frac{1}{3}(-m-1),-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^m,x]
```

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[(-1 - m)/3, -((b*Log[F])/(c + d*x)^3
)]*(-((b*Log[F])/(c + d*x)^3))^((1 + m)/3))/(3*d)
```

Rubi in Sympy [A] time = 7.09703, size = 56, normalized size = 0.92

$$\frac{F^a\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{m}{3}+\frac{1}{3}}(c+dx)^{m+1}\left(-\frac{m}{3}-\frac{1}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**m,x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**3)**(m/3 + 1/3)*(c + d*x)**(m + 1)*Gam
ma(-m/3 - 1/3, -b*log(F)/(c + d*x)**3)/(3*d)
```

Mathematica [A] time = 0.0695781, size = 61, normalized size = 1.

$$\frac{F^a(c+dx)^{m+1}\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{m+1}{3}}\text{Gamma}\left(\frac{1}{3}(-m-1),-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^m,x]
```

```
[Out] (F^a*(c + d*x)^(1 + m)*Gamma[(-1 - m)/3, -((b*Log[F])/(c + d*x)^3
)]*(-((b*Log[F])/(c + d*x)^3))^((1 + m)/3))/(3*d)
```

Maple [F] time = 0.108, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c)^m,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*F^(a + b/(d*x + c)^3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((dx+c)^m F^{\frac{ad^3x^3+3\,acd^2x^2+3\,ac^2dx+ac^3+b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x
+ a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*F^(a + b/(d*x + c)^3), x)
```

3.341 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^{14}\,dx$

Optimal. Leaf size=31

$$-\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] -(b^5*F^a*Gamma[-5, -((b*Log[F])/(c + d*x)^3)]*Log[F]^5)/(3*d)
```

Rubi [A] time = 0.0774464, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^14,x]
```

```
[Out] -(b^5*F^a*Gamma[-5, -((b*Log[F])/(c + d*x)^3)]*Log[F]^5)/(3*d)
```

Rubi in Sympy [A] time = 7.53493, size = 32, normalized size = 1.03

$$-\frac{F^ab^5\left(-5,-\frac{b\log(F)}{(c+dx)^3}\right)\log(F)^5}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**14,x)
```

```
[Out] -F**a*b**5*Gamma(-5, -b*log(F)/(c + d*x)**3)*log(F)**5/(3*d)
```

Mathematica [B] time = 0.180141, size = 112, normalized size = 3.61

$$\frac{F^a\left((c+dx)^3F^{\frac{b}{(c+dx)^3}}\left(b^4\log^4(F)+b^3\log^3(F)(c+dx)^3+2b^2\log^2(F)(c+dx)^6+6b\log(F)(c+dx)^9+24(c+dx)^{12}\right)-b^5\log^5(F)\right.}{360d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^14,x]
```

```
[Out] (F^a*(-(b^5*ExpIntegralEi[(b*Log[F])/(c + d*x)^3]*Log[F]^5) + F^(
b/(c + d*x)^3)*(c + d*x)^3*(24*(c + d*x)^12 + 6*b*(c + d*x)^9*Log
[F] + 2*b^2*(c + d*x)^6*Log[F]^2 + b^3*(c + d*x)^3*Log[F]^3 + b^4
*Log[F]^4)))/(360*d)
```

Maple [F] time = 0.138, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}(dx+c)^{14}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c)^14,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^14,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^14*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/360*(24*F^a*d^14*x^15 + 360*F^a*c*d^13*x^14 + 2520*F^a*c^2*d^12
*x^13 + 6*(1820*F^a*c^3*d^11 + F^a*b*d^11*log(F))*x^12 + 72*(455*
F^a*c^4*d^10 + F^a*b*c*d^10*log(F))*x^11 + 396*(182*F^a*c^5*d^9 +
 F^a*b*c^2*d^9*log(F))*x^10 + 2*(60060*F^a*c^6*d^8 + 660*F^a*b*c^
3*d^8*log(F) + F^a*b^2*d^8*log(F)^2)*x^9 + 18*(8580*F^a*c^7*d^7 +
 165*F^a*b*c^4*d^7*log(F) + F^a*b^2*c*d^7*log(F)^2)*x^8 + 72*(214
5*F^a*c^8*d^6 + 66*F^a*b*c^5*d^6*log(F) + F^a*b^2*c^2*d^6*log(F)^
2)*x^7 + (120120*F^a*c^9*d^5 + 5544*F^a*b*c^6*d^5*log(F) + 168*F^
a*b^2*c^3*d^5*log(F)^2 + F^a*b^3*d^5*log(F)^3)*x^6 + 6*(12012*F^a
*c^10*d^4 + 792*F^a*b*c^7*d^4*log(F) + 42*F^a*b^2*c^4*d^4*log(F)^
2 + F^a*b^3*c*d^4*log(F)^3)*x^5 + 3*(10920*F^a*c^11*d^3 + 990*F^a
*b*c^8*d^3*log(F) + 84*F^a*b^2*c^5*d^3*log(F)^2 + 5*F^a*b^3*c^2*d
^3*log(F)^3)*x^4 + (10920*F^a*c^12*d^2 + 1320*F^a*b*c^9*d^2*log(F
) + 168*F^a*b^2*c^6*d^2*log(F)^2 + 20*F^a*b^3*c^3*d^2*log(F)^3 +
F^a*b^4*d^2*log(F)^4)*x^3 + 3*(840*F^a*c^13*d + 132*F^a*b*c^10*d*
log(F) + 24*F^a*b^2*c^7*d*log(F)^2 + 5*F^a*b^3*c^4*d*log(F)^3 + F
^a*b^4*c*d*log(F)^4)*x^2 + 3*(120*F^a*c^14 + 24*F^a*b*c^11*log(F)
 + 6*F^a*b^2*c^8*log(F)^2 + 2*F^a*b^3*c^5*log(F)^3 + F^a*b^4*c^2*
log(F)^4)*x)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)) + in
tegrate(-1/120*(24*F^a*b*c^15*log(F) + 6*F^a*b^2*c^12*log(F)^2 -
F^a*b^5*d^3*x^3*log(F)^5 + 2*F^a*b^3*c^9*log(F)^3 - 3*F^a*b^5*c*d
^2*x^2*log(F)^5 + F^a*b^4*c^6*log(F)^4 - 3*F^a*b^5*c^2*d*x*log(F)
^5)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^4 + 4*
c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.26265, size = 926, normalized size = 29.87

$$-\frac{F^a b^5 \mathrm{Ei}\left(\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)\log(F)^5 - \left(24\,d^{15}x^{15} + 360\,cd^{14}x^{14} + 2520\,c^2d^{13}x^{13} + 10920\,c^3d^{12}x^{12} + 32760\,c^4d^{11}x^{11} + 72\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^14*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/360*(F^a*b^5*Ei(b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x +
c^3))*log(F)^5 - (24*d^15*x^15 + 360*c*d^14*x^14 + 2520*c^2*d^13*
x^13 + 10920*c^3*d^12*x^12 + 32760*c^4*d^11*x^11 + 72072*c^5*d^10
*x^10 + 120120*c^6*d^9*x^9 + 154440*c^7*d^8*x^8 + 154440*c^8*d^7*
x^7 + 120120*c^9*d^6*x^6 + 72072*c^10*d^5*x^5 + 32760*c^11*d^4*x^
4 + 10920*c^12*d^3*x^3 + 2520*c^13*d^2*x^2 + 360*c^14*d*x + 24*c^
15 + (b^4*d^3*x^3 + 3*b^4*c*d^2*x^2 + 3*b^4*c^2*d*x + b^4*c^3)*lo
g(F)^4 + (b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3*c^2*d^4*x^4 + 20
*b^3*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^5*d*x + b^3*c^6)*
log(F)^3 + 2*(b^2*d^9*x^9 + 9*b^2*c*d^8*x^8 + 36*b^2*c^2*d^7*x^7
+ 84*b^2*c^3*d^6*x^6 + 126*b^2*c^4*d^5*x^5 + 126*b^2*c^5*d^4*x^4
+ 84*b^2*c^6*d^3*x^3 + 36*b^2*c^7*d^2*x^2 + 9*b^2*c^8*d*x + b^2*c
^9)*log(F)^2 + 6*(b*d^12*x^12 + 12*b*c*d^11*x^11 + 66*b*c^2*d^10*
```

```
x^10 + 220*b*c^3*d^9*x^9 + 495*b*c^4*d^8*x^8 + 792*b*c^5*d^7*x^7
+ 924*b*c^6*d^6*x^6 + 792*b*c^7*d^5*x^5 + 495*b*c^8*d^4*x^4 + 220
*b*c^9*d^3*x^3 + 66*b*c^10*d^2*x^2 + 12*b*c^11*d*x + b*c^12)*log(
F))*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3
*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**14,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{14} F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^14*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^14*F^(a + b/(d*x + c)^3), x)
```

3.342 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^{11}\,dx$

Optimal. Leaf size=31

$$\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] (b^4*F^a*Gamma[-4, -((b*Log[F])/(c + d*x)^3)]*Log[F]^4)/(3*d)
```

Rubi [A] time = 0.0775168, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^11,x]

[Out] (b^4*F^a*Gamma[-4, -((b*Log[F])/(c + d*x)^3)]*Log[F]^4)/(3*d)
```

Rubi in Sympy [A] time = 7.75368, size = 31, normalized size = 1.

$$\frac{F^ab^4\left(-4,-\frac{b\log(F)}{(c+dx)^3}\right)\log(F)^4}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**11,x)

[Out] F**a*b**4*Gamma(-4, -b*log(F)/(c + d*x)**3)*log(F)**4/(3*d)
```

Mathematica [B] time = 0.119253, size = 96, normalized size = 3.1

$$\frac{F^a\left((c+dx)^3F^{\frac{b}{(c+dx)^3}}\left(b^3\log^3(F)+b^2\log^2(F)(c+dx)^3+2b\log(F)(c+dx)^6+6(c+dx)^9\right)-b^4\log^4(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)\right)}{72d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^11,x]

[Out] (F^a*(-(b^4*ExpIntegralEi[(b*Log[F])/(c + d*x)^3]*Log[F]^4) + F^(
b/(c + d*x)^3)*(c + d*x)^3*(6*(c + d*x)^9 + 2*b*(c + d*x)^6*Log[F
] + b^2*(c + d*x)^3*Log[F]^2 + b^3*Log[F]^3)))/(72*d)
```

Maple [F] time = 0.106, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}(dx+c)^{11}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c)^11,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^11,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{72}\left(6\,F^{a}d^{11}x^{12}+72\,F^{a}cd^{10}x^{11}+396\,F^{a}c^{2}d^{9}x^{10}+2\left(660\,F^{a}c^{3}d^{8}+F^{a}bd^{8}\log\left(F\right)\right)x^{9}+18\left(165\,F^{a}c^{4}d^{7}+F^{a}bcd^{7}\log\left(F\right)\right)x^{8}+\right.$$
$$+\int-\frac{\left(6\,F^{a}bc^{12}\log\left(F\right)-F^{a}b^{4}d^{3}x^{3}\log\left(F\right)^{4}+2\,F^{a}b^{2}c^{9}\log\left(F\right)^{2}-3\,F^{a}b^{4}cd^{2}x^{2}\log\left(F\right)^{4}+F^{a}b^{3}c^{6}\log\left(F\right)^{3}-3\,F^{a}b^{4}c^{2}dx\log\left(F\right)^{4}\right)F}{24\left(d^{4}x^{4}+4\,cd^{3}x^{3}+6\,c^{2}d^{2}x^{2}+4\,c^{3}dx+c^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/72*(6*F^a*d^11*x^12 + 72*F^a*c*d^10*x^11 + 396*F^a*c^2*d^9*x^10
 + 2*(660*F^a*c^3*d^8 + F^a*b*d^8*log(F))*x^9 + 18*(165*F^a*c^4*d
^7 + F^a*b*c*d^7*log(F))*x^8 + 72*(66*F^a*c^5*d^6 + F^a*b*c^2*d^6
*log(F))*x^7 + (5544*F^a*c^6*d^5 + 168*F^a*b*c^3*d^5*log(F) + F^a
*b^2*d^5*log(F)^2)*x^6 + 6*(792*F^a*c^7*d^4 + 42*F^a*b*c^4*d^4*lo
g(F) + F^a*b^2*c*d^4*log(F)^2)*x^5 + 3*(990*F^a*c^8*d^3 + 84*F^a*
b*c^5*d^3*log(F) + 5*F^a*b^2*c^2*d^3*log(F)^2)*x^4 + (1320*F^a*c^
9*d^2 + 168*F^a*b*c^6*d^2*log(F) + 20*F^a*b^2*c^3*d^2*log(F)^2 +
F^a*b^3*d^2*log(F)^3)*x^3 + 3*(132*F^a*c^10*d + 24*F^a*b*c^7*d*lo
g(F) + 5*F^a*b^2*c^4*d*log(F)^2 + F^a*b^3*c*d*log(F)^3)*x^2 + 3*(
24*F^a*c^11 + 6*F^a*b*c^8*log(F) + 2*F^a*b^2*c^5*log(F)^2 + F^a*b
^3*c^2*log(F)^3)*x)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3
)) + integrate(-1/24*(6*F^a*b*c^12*log(F) - F^a*b^4*d^3*x^3*log(F
)^4 + 2*F^a*b^2*c^9*log(F)^2 - 3*F^a*b^4*c*d^2*x^2*log(F)^4 + F^a
*b^3*c^6*log(F)^3 - 3*F^a*b^4*c^2*d*x*log(F)^4)*F^(b/(d^3*x^3 + 3
*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2
*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.278766, size = 657, normalized size = 21.19

$$-\frac{F^{a}b^{4}\mathrm{Ei}\left(\frac{b\log(F)}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}\right)\log\left(F\right)^{4}-\left(6\,d^{12}x^{12}+72\,cd^{11}x^{11}+396\,c^{2}d^{10}x^{10}+1320\,c^{3}d^{9}x^{9}+2970\,c^{4}d^{8}x^{8}+4752\,c^{5}d^{7}x^{7}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/72*(F^a*b^4*Ei(b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c
^3))*log(F)^4 - (6*d^12*x^12 + 72*c*d^11*x^11 + 396*c^2*d^10*x^10
 + 1320*c^3*d^9*x^9 + 2970*c^4*d^8*x^8 + 4752*c^5*d^7*x^7 + 5544*
c^6*d^6*x^6 + 4752*c^7*d^5*x^5 + 2970*c^8*d^4*x^4 + 1320*c^9*d^3*
x^3 + 396*c^10*d^2*x^2 + 72*c^11*d*x + 6*c^12 + (b^3*d^3*x^3 + 3*
b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*log(F)^3 + (b^2*d^6*x^6
+ 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b^2*c^3*d^3*x^3 + 15*
b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*log(F)^2 + 2*(b*d^9*x^
9 + 9*b*c*d^8*x^8 + 36*b*c^2*d^7*x^7 + 84*b*c^3*d^6*x^6 + 126*b*c
^4*d^5*x^5 + 126*b*c^5*d^4*x^4 + 84*b*c^6*d^3*x^3 + 36*b*c^7*d^2*
x^2 + 9*b*c^8*d*x + b*c^9)*log(F))*F^((a*d^3*x^3 + 3*a*c*d^2*x^2
+ 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c
^3)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**11,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{11} F^{a+\frac{b}{(dx+c)^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^11*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^11*F^(a + b/(d*x + c)^3), x)
```

3.343 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^8\,dx$

Optimal. Leaf size=121

$$-\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{18d}+\frac{b^2\log^2(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^3}}}{18d}+\frac{(c+dx)^9F^{a+\frac{b}{(c+dx)^3}}}{9d}+\frac{b\log(F)(c+dx)^6F^{a+\frac{b}{(c+dx)^3}}}{18d}$$

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x)^9)/(9*d) + (b*F^(a + b/(c + d*x)
^3)*(c + d*x)^6*Log[F])/(18*d) + (b^2*F^(a + b/(c + d*x)^3)*(c +
d*x)^3*Log[F]^2)/(18*d) - (b^3*F^a*ExpIntegralEi[(b*Log[F])/(c +
d*x)^3]*Log[F]^3)/(18*d)
```

Rubi [A] time = 0.31267, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{18d}+\frac{b^2\log^2(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^3}}}{18d}+\frac{(c+dx)^9F^{a+\frac{b}{(c+dx)^3}}}{9d}+\frac{b\log(F)(c+dx)^6F^{a+\frac{b}{(c+dx)^3}}}{18d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^8,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x)^9)/(9*d) + (b*F^(a + b/(c + d*x)
^3)*(c + d*x)^6*Log[F])/(18*d) + (b^2*F^(a + b/(c + d*x)^3)*(c +
d*x)^3*Log[F]^2)/(18*d) - (b^3*F^a*ExpIntegralEi[(b*Log[F])/(c +
d*x)^3]*Log[F]^3)/(18*d)
```

Rubi in Sympy [A] time = 26.7853, size = 107, normalized size = 0.88

$$-\frac{F^ab^3\log{(F)}^3\operatorname{Ei}{\left(\frac{b\log{(F)}}{(c+dx)^3}\right)}}{18d}+\frac{F^{a+\frac{b}{(c+dx)^3}}b^2(c+dx)^3\log{(F)}^2}{18d}+\frac{F^{a+\frac{b}{(c+dx)^3}}b(c+dx)^6\log{(F)}}{18d}+\frac{F^{a+\frac{b}{(c+dx)^3}}(c+dx)^9}{9d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**8,x)
```

```
[Out] -F**a*b**3*log(F)**3*Ei(b*log(F)/(c + d*x)**3)/(18*d) + F**(a + b
/(c + d*x)**3)*b**2*(c + d*x)**3*log(F)**2/(18*d) + F**(a + b/(c
+ d*x)**3)*b*(c + d*x)**6*log(F)/(18*d) + F**(a + b/(c + d*x)**3)
*(c + d*x)**9/(9*d)
```

Mathematica [A] time = 0.102539, size = 80, normalized size = 0.66

$$\frac{F^a\left((c+dx)^3F^{\frac{b}{(c+dx)^3}}\left(b^2\log^2(F)+b\log(F)(c+dx)^3+2(c+dx)^6\right)-b^3\log^3(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)\right)}{18d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^8,x]
```

```
[Out] (F^a*(-(b^3*ExpIntegralEi[(b*Log[F])/(c + d*x)^3]*Log[F]^3) + F^(
b/(c + d*x)^3)*(c + d*x)^3*(2*(c + d*x)^6 + b*(c + d*x)^3*Log[F]
+ b^2*Log[F]^2))))/(18*d)
```

Maple [F] time = 0.081, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}} (dx+c)^8 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c)^8,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^8,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{18}\left(2\,F^a d^8 x^9 + 18\,F^a c d^7 x^8 + 72\,F^a c^2 d^6 x^7 + \left(168\,F^a c^3 d^5 + F^a b d^5 \log(F)\right)x^6 + 6\left(42\,F^a c^4 d^4 + F^a b c d^4 \log(F)\right)x^5 + 3\left(84\,F^a c\right.\right.$$
$$+\int \frac{\left(F^a b^3 d^3 x^3 \log(F)^3 - 2\,F^a b c^9 \log(F) + 3\,F^a b^3 c d^2 x^2 \log(F)^3 - F^a b^2 c^6 \log(F)^2 + 3\,F^a b^3 c^2 d x \log(F)^3\right) F^{\frac{b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}}{6\left(d^4x^4 + 4\,cd^3x^3 + 6\,c^2d^2x^2 + 4\,c^3dx + c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/18*(2*F^a*d^8*x^9 + 18*F^a*c*d^7*x^8 + 72*F^a*c^2*d^6*x^7 + (16
8*F^a*c^3*d^5 + F^a*b*d^5*log(F))*x^6 + 6*(42*F^a*c^4*d^4 + F^a*b
*c*d^4*log(F))*x^5 + 3*(84*F^a*c^5*d^3 + 5*F^a*b*c^2*d^3*log(F))*
x^4 + (168*F^a*c^6*d^2 + 20*F^a*b*c^3*d^2*log(F) + F^a*b^2*d^2*lo
g(F)^2)*x^3 + 3*(24*F^a*c^7*d + 5*F^a*b*c^4*d*log(F) + F^a*b^2*c*
d*log(F)^2)*x^2 + 3*(6*F^a*c^8 + 2*F^a*b*c^5*log(F) + F^a*b^2*c^2
*log(F)^2)*x)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)) + i
ntegrate(1/6*(F^a*b^3*d^3*x^3*log(F)^3 - 2*F^a*b*c^9*log(F) + 3*F
^a*b^3*c*d^2*x^2*log(F)^3 - F^a*b^2*c^6*log(F)^2 + 3*F^a*b^3*c^2*
d*x*log(F)^3)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^
4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.284017, size = 446, normalized size = 3.69

$$-\frac{F^a b^3 \mathrm{Ei}\left(\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)\log(F)^3 - \left(2\,d^9x^9 + 18\,cd^8x^8 + 72\,c^2d^7x^7 + 168\,c^3d^6x^6 + 252\,c^4d^5x^5 + 252\,c^5d^4x^4 + 168\,c^6d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/18*(F^a*b^3*Ei(b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c
^3))*log(F)^3 - (2*d^9*x^9 + 18*c*d^8*x^8 + 72*c^2*d^7*x^7 + 168*
c^3*d^6*x^6 + 252*c^4*d^5*x^5 + 252*c^5*d^4*x^4 + 168*c^6*d^3*x^3
 + 72*c^7*d^2*x^2 + 18*c^8*d*x + 2*c^9 + (b^2*d^3*x^3 + 3*b^2*c*d
```

```
^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*log(F)^2 + (b*d^6*x^6 + 6*b*c*d
^5*x^5 + 15*b*c^2*d^4*x^4 + 20*b*c^3*d^3*x^3 + 15*b*c^4*d^2*x^2 +
 6*b*c^5*d*x + b*c^6)*log(F))*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a
*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)))
/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^8 F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^8*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^8*F^(a + b/(d*x + c)^3), x)
```

3.344 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^5\,dx$

Optimal. Leaf size=87

$$-\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{6d}+\frac{(c+dx)^6F^{a+\frac{b}{(c+dx)^3}}}{6d}+\frac{b\log(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^3}}}{6d}$$

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x)^6)/(6*d) + (b*F^(a + b/(c + d*x)
^3)*(c + d*x)^3*Log[F])/(6*d) - (b^2*F^a*ExpIntegralEi[(b*Log[F])
/(c + d*x)^3]*Log[F]^2)/(6*d)
```

Rubi [A] time = 0.227358, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{6d}+\frac{(c+dx)^6F^{a+\frac{b}{(c+dx)^3}}}{6d}+\frac{b\log(F)(c+dx)^3F^{a+\frac{b}{(c+dx)^3}}}{6d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^5,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x)^6)/(6*d) + (b*F^(a + b/(c + d*x)
^3)*(c + d*x)^3*Log[F])/(6*d) - (b^2*F^a*ExpIntegralEi[(b*Log[F])
/(c + d*x)^3]*Log[F]^2)/(6*d)
```

Rubi in Sympy [A] time = 17.7804, size = 76, normalized size = 0.87

$$-\frac{F^ab^2\log(F)^2\operatorname{Ei}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{6d}+\frac{F^{a+\frac{b}{(c+dx)^3}}b(c+dx)^3\log(F)}{6d}+\frac{F^{a+\frac{b}{(c+dx)^3}}(c+dx)^6}{6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**5,x)
```

```
[Out] -F**a*b**2*log(F)**2*Ei(b*log(F)/(c + d*x)**3)/(6*d) + F**(a + b/
(c + d*x)**3)*b*(c + d*x)**3*log(F)/(6*d) + F**(a + b/(c + d*x)**
3)*(c + d*x)**6/(6*d)
```

Mathematica [A] time = 0.133506, size = 63, normalized size = 0.72

$$\frac{F^a\left((c+dx)^3F^{\frac{b}{(c+dx)^3}}\left(b\log(F)+(c+dx)^3\right)-b^2\log^2(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)\right)}{6d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^5,x]
```

```
[Out] (F^a*(-(b^2*ExpIntegralEi[(b*Log[F])/(c + d*x)^3]*Log[F]^2) + F^(
b/(c + d*x)^3)*(c + d*x)^3*((c + d*x)^3 + b*Log[F])))/(6*d)
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}(dx+c)^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c)^5,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^5,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{6}\left(F^a d^5 x^6 + 6\,F^a c d^4 x^5 + 15\,F^a c^2 d^3 x^4 + \left(20\,F^a c^3 d^2 + F^a b d^2 \log\left(F\right)\right) x^3 + 3\left(5\,F^a c^4 d + F^a b c d \log\left(F\right)\right) x^2 + 3\left(2\,F^a c^5 + F^a b c^2\right.\right.$$
$$+\int \frac{\left(F^a b^2 d^3 x^3 \log\left(F\right)^2 + 3\,F^a b^2 c d^2 x^2 \log\left(F\right)^2 - F^a b c^6 \log\left(F\right) + 3\,F^a b^2 c^2 d x \log\left(F\right)^2\right) F^{\frac{b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}}{2\left(d^4x^4 + 4\,cd^3x^3 + 6\,c^2d^2x^2 + 4\,c^3dx + c^4\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/6*(F^a*d^5*x^6 + 6*F^a*c*d^4*x^5 + 15*F^a*c^2*d^3*x^4 + (20*F^a
*c^3*d^2 + F^a*b*d^2*log(F))*x^3 + 3*(5*F^a*c^4*d + F^a*b*c*d*log
(F))*x^2 + 3*(2*F^a*c^5 + F^a*b*c^2*log(F))*x)*F^(b/(d^3*x^3 + 3*
c*d^2*x^2 + 3*c^2*d*x + c^3)) + integrate(1/2*(F^a*b^2*d^3*x^3*lo
g(F)^2 + 3*F^a*b^2*c*d^2*x^2*log(F)^2 - F^a*b*c^6*log(F) + 3*F^a*
b^2*c^2*d*x*log(F)^2)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c
^3))/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x
)
```

Fricas [A] time = 0.274049, size = 288, normalized size = 3.31

$$-\frac{F^a b^2 \mathrm{Ei}\left(\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)\log\left(F\right)^2 - \left(d^6x^6 + 6\,cd^5x^5 + 15\,c^2d^4x^4 + 20\,c^3d^3x^3 + 15\,c^4d^2x^2 + 6\,c^5dx + c^6 + \left(bd^3x^3 + 3\,b\right.\right.}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/6*(F^a*b^2*Ei(b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^
3))*log(F)^2 - (d^6*x^6 + 6*c*d^5*x^5 + 15*c^2*d^4*x^4 + 20*c^3*d
^3*x^3 + 15*c^4*d^2*x^2 + 6*c^5*d*x + c^6 + (b*d^3*x^3 + 3*b*c*d^
2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*F^((a*d^3*x^3 + 3*a*c*d^2*x^
2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x +
 c^3)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^5 F^{a+\frac{b}{(dx+c)^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^5*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^5*F^(a + b/(d*x + c)^3), x)
```

3.345 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^2\,dx$

Optimal. Leaf size=53

$$\frac{(c+dx)^3F^{a+\frac{b}{(c+dx)^3}}}{3d}-\frac{bF^a\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x)^3)/(3*d) - (b*F^a*ExpIntegralEi[
(b*Log[F])/(c + d*x)^3]*Log[F])/(3*d)
```

Rubi [A] time = 0.14883, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{(c+dx)^3F^{a+\frac{b}{(c+dx)^3}}}{3d}-\frac{bF^a\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^2,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x)^3)/(3*d) - (b*F^a*ExpIntegralEi[
(b*Log[F])/(c + d*x)^3]*Log[F])/(3*d)
```

Rubi in Sympy [A] time = 10.5253, size = 46, normalized size = 0.87

$$-\frac{F^ab\log{(F)}\,\text{Ei}\left(\frac{b\log{(F)}}{(c+dx)^3}\right)}{3d}+\frac{F^{a+\frac{b}{(c+dx)^3}}\,(c+dx)^3}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**2,x)
```

```
[Out] -F**a*b*log(F)*Ei(b*log(F)/(c + d*x)**3)/(3*d) + F**(a + b/(c + d
*x)**3)*(c + d*x)**3/(3*d)
```

Mathematica [A] time = 0.0594042, size = 47, normalized size = 0.89

$$\frac{F^a\left((c+dx)^3F^{\frac{b}{(c+dx)^3}}-b\log(F)\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^2,x]
```

```
[Out] (F^a*(F^(b/(c + d*x)^3)*(c + d*x)^3 - b*ExpIntegralEi[(b*Log[F])/
(c + d*x)^3]*Log[F]))/(3*d)
```

Maple [F] time = 0.044, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}\,(dx+c)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b/(d*x+c)^3)*(d*x+c)^2,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\left(F^{a}d^{2}x^{3}+3\,F^{a}cdx^{2}+3\,F^{a}c^{2}x\right)F^{\frac{b}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}}+\int\frac{\left(F^{a}bd^{3}x^{3}\log\left(F\right)+3\,F^{a}bcd^{2}x^{2}\log\left(F\right)+3\,F^{a}bc^{2}dx\log\left(F\right)\right)F^{\frac{b}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}}}{d^{4}x^{4}+4\,cd^{3}x^{3}+6\,c^{2}d^{2}x^{2}+4\,c^{3}dx+c^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((d*x + c)^2*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/3*(F^a*d^2*x^3 + 3*F^a*c*d*x^2 + 3*F^a*c^2*x)*F^(b/(d^3*x^3 + 3
*c*d^2*x^2 + 3*c^2*d*x + c^3)) + integrate((F^a*b*d^3*x^3*log(F)
+ 3*F^a*b*c*d^2*x^2*log(F) + 3*F^a*b*c^2*d*x*log(F))*F^(b/(d^3*x^
3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^
2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.28104, size = 190, normalized size = 3.58

$$-\frac{F^{a}b\mathrm{Ei}\left(\frac{b\log(F)}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}\right)\log\left(F\right)-\left(d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}\right)F^{\frac{ad^{3}x^{3}+3\,acd^{2}x^{2}+3\,ac^{2}dx+ac^{3}+b}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}}}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((d*x + c)^2*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/3*(F^a*b*Ei(b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)
)*log(F) - (d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*F^((a*d^3*x^
3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x
^2 + 3*c^2*d*x + c^3)))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int(dx+c)^{2}F^{a+\frac{b}{(dx+c)^{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^(a + b/(d*x + c)^3),x, algorithm="giac")

[Out] integrate((d*x + c)^2*F^(a + b/(d*x + c)^3), x)
```

3.346 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{c+dx} \, dx$

Optimal. Leaf size=22

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] -(F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)^3])/(3*d)
```

Rubi [A] time = 0.0725261, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x),x]

[Out] -(F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)^3])/(3*d)
```

Rubi in Sympy [A] time = 5.4265, size = 20, normalized size = 0.91

$$-\frac{F^a \operatorname{Ei}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c),x)

[Out] -F**a*Ei(b*log(F)/(c + d*x)**3)/(3*d)
```

Mathematica [A] time = 0.0111924, size = 22, normalized size = 1.

$$-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x),x]

[Out] -(F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)^3])/(3*d)
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int \frac{1}{dx+c} F^{a+\frac{b}{(dx+c)^3}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c),x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c),x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c), x)
```

Fricas [A] time = 0.281644, size = 57, normalized size = 2.59

$$-\frac{F^a \operatorname{Ei}\left(\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c),x, algorithm="fricas")
```

```
[Out] -1/3*F^a*Ei(b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c), x)
```

3.347 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^4}\,dx$

Optimal. Leaf size=27

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)}$$

```
[Out] -F^(a + b/(c + d*x)^3)/(3*b*d*Log[F])
```

Rubi [A] time = 0.0691458, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^4,x]
```

```
[Out] -F^(a + b/(c + d*x)^3)/(3*b*d*Log[F])
```

Rubi in Sympy [A] time = 6.38586, size = 20, normalized size = 0.74

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**4,x)
```

```
[Out] -F**(a + b/(c + d*x)**3)/(3*b*d*log(F))
```

Mathematica [A] time = 0.0179814, size = 27, normalized size = 1.

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^4,x]
```

```
[Out] -F^(a + b/(c + d*x)^3)/(3*b*d*Log[F])
```

Maple [A] time = 0.003, size = 26, normalized size = 1.

$$-\frac{1}{3\ln(F)bd}F^{a+\frac{b}{(dx+c)^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^4,x)
```

```
[Out] -1/3*F^(a+b/(d*x+c)^3)/b/d/ln(F)
```

Maxima [A] time = 0.863007, size = 34, normalized size = 1.26

$$-\frac{F^{a+\frac{b}{(dx+c)^3}}}{3\,bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^4,x, algorithm="maxima")
```

```
[Out] -1/3*F^(a + b/(d*x + c)^3)/(b*d*log(F))
```

Fricas [A] time = 0.259226, size = 104, normalized size = 3.85

$$-\frac{F^{\frac{ad^3x^3+3\,acd^2x^2+3\,ac^2dx+ac^3+b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}}{3\,bd\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^4,x, algorithm="fricas")
```

```
[Out] -1/3*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^
3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(b*d*log(F))
```

Sympy [A] time = 0.977163, size = 66, normalized size = 2.44

$$\begin{cases} -\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log\left(F\right)} & \text{for}\: 3bd\log\left(F\right) \neq 0 \\ -\frac{1}{3c^3d+9c^2d^2x+9cd^3x^2+3d^4x^3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**4,x)
```

```
[Out] Piecewise((-F**(a + b/(c + d*x)**3)/(3*b*d*log(F)), Ne(3*b*d*log(
F), 0)), (-1/(3*c**3*d + 9*c**2*d**2*x + 9*c*d**3*x**2 + 3*d**4*x
**3), True))
```

GIAC/XCAS [A] time = 0.227214, size = 34, normalized size = 1.26

$$-\frac{F^{a+\frac{b}{(dx+c)^3}}}{3\,bd\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^4,x, algorithm="giac")
```

```
[Out] -1/3*F^(a + b/(d*x + c)^3)/(b*d*ln(F))
```

3.348 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^7} dx$

Optimal. Leaf size=62

$$\frac{F^{a+\frac{b}{(c+dx)^3}}}{3b^2d\log^2(F)} - \frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)(c+dx)^3}$$

```
[Out] F^(a + b/(c + d*x)^3)/(3*b^2*d*Log[F]^2) - F^(a + b/(c + d*x)^3)/
(3*b*d*(c + d*x)^3*Log[F])
```

Rubi [A] time = 0.141681, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{F^{a+\frac{b}{(c+dx)^3}}}{3b^2d\log^2(F)} - \frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^7,x]
```

```
[Out] F^(a + b/(c + d*x)^3)/(3*b^2*d*Log[F]^2) - F^(a + b/(c + d*x)^3)/
(3*b*d*(c + d*x)^3*Log[F])
```

Rubi in Sympy [A] time = 13.5141, size = 49, normalized size = 0.79

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd(c+dx)^3\log(F)} + \frac{F^{a+\frac{b}{(c+dx)^3}}}{3b^2d\log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**7,x)
```

```
[Out] -F**(a + b/(c + d*x)**3)/(3*b*d*(c + d*x)**3*log(F)) + F**(a + b/
(c + d*x)**3)/(3*b**2*d*log(F)**2)
```

Mathematica [A] time = 0.0540189, size = 47, normalized size = 0.76

$$\frac{F^{a+\frac{b}{(c+dx)^3}}\left((c+dx)^3 - b\log(F)\right)}{3b^2d\log^2(F)(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^7,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*((c + d*x)^3 - b*Log[F]))/(3*b^2*d*(c + d*
x)^3*Log[F]^2)
```

Maple [B] time = 0.088, size = 261, normalized size = 4.2

$$\frac{1}{(dx+c)^6}\left(\frac{d^5x^6}{3(\ln(F))^2b^2}e^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)} - \frac{c^2\left(-2c^3+b\ln(F)\right)x}{(\ln(F))^2b^2}e^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)} - \frac{c^3\left(-c^3+b\ln(F)\right)}{3(\ln(F))^2b^2d}e^{\left(a+\frac{b}{(dx+c)^3}\right)\ln(F)} - \frac{d^2(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b/(d*x+c)^3)/(d*x+c)^7,x)
```

```
[Out] (1/3/ln(F)^2/b^2*d^5*x^6*exp((a+b/(d*x+c)^3)*ln(F))-c^2*(-2*c^3+b
*ln(F))/ln(F)^2/b^2*x*exp((a+b/(d*x+c)^3)*ln(F))-1/3*c^3*(-c^3+b*
ln(F))/d/ln(F)^2/b^2*exp((a+b/(d*x+c)^3)*ln(F))-1/3*d^2*(-20*c^3+
b*ln(F))/ln(F)^2/b^2*x^3*exp((a+b/(d*x+c)^3)*ln(F))+5*d^3*c^2/ln(
F)^2/b^2*x^4*exp((a+b/(d*x+c)^3)*ln(F))+2*d^4*c/ln(F)^2/b^2*x^5*e
xp((a+b/(d*x+c)^3)*ln(F))-c*d*(-5*c^3+b*ln(F))/ln(F)^2/b^2*x^2*ex
p((a+b/(d*x+c)^3)*ln(F)))/(d*x+c)^6
```

Maxima [A] time = 0.793118, size = 194, normalized size = 3.13

$$\frac{\left(F^{a}d^{3}x^{3}+3\,F^{a}cd^{2}x^{2}+3\,F^{a}c^{2}dx+F^{a}c^{3}-F^{a}b\log\left(F\right)\right)F^{\frac{b}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}}}{3\,\left(b^{2}d^{4}x^{3}\log\left(F\right)^{2}+3\,b^{2}cd^{3}x^{2}\log\left(F\right)^{2}+3\,b^{2}c^{2}d^{2}x\log\left(F\right)^{2}+b^{2}c^{3}d\log\left(F\right)^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/3*(F^a*d^3*x^3 + 3*F^a*c*d^2*x^2 + 3*F^a*c^2*d*x + F^a*c^3 - F^
a*b*log(F))*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(b^2*
d^4*x^3*log(F)^2 + 3*b^2*c*d^3*x^2*log(F)^2 + 3*b^2*c^2*d^2*x*log
(F)^2 + b^2*c^3*d*log(F)^2)
```

Fricas [A] time = 0.252929, size = 200, normalized size = 3.23

$$\frac{\left(d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}-b\log\left(F\right)\right)F^{\frac{ad^{3}x^{3}+3\,acd^{2}x^{2}+3\,ac^{2}dx+ac^{3}+b}{d^{3}x^{3}+3\,cd^{2}x^{2}+3\,c^{2}dx+c^{3}}}}{3\,(b^{2}d^{4}x^{3}+3\,b^{2}cd^{3}x^{2}+3\,b^{2}c^{2}d^{2}x+b^{2}c^{3}d)\log\left(F\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/3*(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3 - b*log(F))*F^((a*d^
3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d
^2*x^2 + 3*c^2*d*x + c^3))/((b^2*d^4*x^3 + 3*b^2*c*d^3*x^2 + 3*b^
2*c^2*d^2*x + b^2*c^3*d)*log(F)^2)
```

Sympy [A] time = 0.513618, size = 114, normalized size = 1.84

$$\frac{F^{a+\frac{b}{(c+dx)^{3}}}\left(-b\log\left(F\right)+c^{3}+3c^{2}dx+3cd^{2}x^{2}+d^{3}x^{3}\right)}{3b^{2}c^{3}d\log\left(F\right)^{2}+9b^{2}c^{2}d^{2}x\log\left(F\right)^{2}+9b^{2}cd^{3}x^{2}\log\left(F\right)^{2}+3b^{2}d^{4}x^{3}\log\left(F\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**7,x)
```

```
[Out] F**(a + b/(c + d*x)**3)*(-b*log(F) + c**3 + 3*c**2*d*x + 3*c*d**2
*x**2 + d**3*x**3)/(3*b**2*c**3*d*log(F)**2 + 9*b**2*c**2*d**2*x*
log(F)**2 + 9*b**2*c*d**3*x**2*log(F)**2 + 3*b**2*d**4*x**3*log(F
)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^7,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^7, x)
```

3.349 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^{10}}\,dx$

Optimal. Leaf size=96

$$-\frac{2F^{a+\frac{b}{(c+dx)^3}}}{3b^3d\log^3(F)}+\frac{2F^{a+\frac{b}{(c+dx)^3}}}{3b^2d\log^2(F)(c+dx)^3}-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)(c+dx)^6}$$

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

Rubi [A] time = 0.227307, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{2F^{a+\frac{b}{(c+dx)^3}}}{3b^3d\log^3(F)}+\frac{2F^{a+\frac{b}{(c+dx)^3}}}{3b^2d\log^2(F)(c+dx)^3}-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)(c+dx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^10,x]
```

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

Rubi in Sympy [A] time = 22.3098, size = 83, normalized size = 0.86

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\,(c+dx)^6\log(F)}+\frac{2F^{a+\frac{b}{(c+dx)^3}}}{3b^2d\,(c+dx)^3\log(F)^2}-\frac{2F^{a+\frac{b}{(c+dx)^3}}}{3b^3d\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**10,x)
```

```
[Out] -F**(a + b/(c + d*x)**3)/(3*b*d*(c + d*x)**6*log(F)) + 2*F**(a +
b/(c + d*x)**3)/(3*b**2*d*(c + d*x)**3*log(F)**2) - 2*F**(a + b/(
c + d*x)**3)/(3*b**3*d*log(F)**3)
```

Mathematica [A] time = 0.0656045, size = 64, normalized size = 0.67

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}\left(b^2\log^2(F)-2b\log(F)(c+dx)^3+2(c+dx)^6\right)}{3b^3d\log^3(F)(c+dx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^10,x]
```

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

Maple [B] time = 0.159, size = 434, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^10,x)
```

```
[Out] (-2/3*d^8/ln(F)^3/b^3*x^9*exp((a+b/(d*x+c)^3)*ln(F))-c^2*(6*c^6-4
*ln(F)*b*c^3+ln(F)^2*b^2)/b^3/ln(F)^3*x*exp((a+b/(d*x+c)^3)*ln(F)
)-1/3*d^2*(168*c^6-40*ln(F)*b*c^3+ln(F)^2*b^2)/ln(F)^3/b^3*x^3*ex
p((a+b/(d*x+c)^3)*ln(F))+2/3*d^5*(-84*c^3+b*ln(F))/ln(F)^3/b^3*x^
6*exp((a+b/(d*x+c)^3)*ln(F))-24*d^6*c^2/ln(F)^3/b^3*x^7*exp((a+b/
(d*x+c)^3)*ln(F))-6*d^7*c/ln(F)^3/b^3*x^8*exp((a+b/(d*x+c)^3)*ln(
F))-1/3*(2*c^6-2*ln(F)*b*c^3+ln(F)^2*b^2)*c^3/b^3/ln(F)^3/d*exp((
a+b/(d*x+c)^3)*ln(F))-c*d*(24*c^6-10*ln(F)*b*c^3+ln(F)^2*b^2)/ln(
F)^3/b^3*x^2*exp((a+b/(d*x+c)^3)*ln(F))+4*c*d^4*(-21*c^3+b*ln(F))
/ln(F)^3/b^3*x^5*exp((a+b/(d*x+c)^3)*ln(F))+2*c^2*d^3*(-42*c^3+5*
b*ln(F))/ln(F)^3/b^3*x^4*exp((a+b/(d*x+c)^3)*ln(F)))/(d*x+c)^9
```

Maxima [A] time = 0.793311, size = 405, normalized size = 4.22

$$-\frac{\left(2\,F^{a}d^{6}x^{6}+12\,F^{a}cd^{5}x^{5}+30\,F^{a}c^{2}d^{4}x^{4}+2\,F^{a}c^{6}-2\,F^{a}bc^{3}\log\left(F\right)+F^{a}b^{2}\log\left(F\right)^{2}+2\left(20\,F^{a}c^{3}d^{3}-F^{a}bd^{3}\log\left(F\right)\right)x^{3}+6\,(5\cdots}{3\left(b^{3}d^{7}x^{6}\log\left(F\right)^{3}+6\,b^{3}cd^{6}x^{5}\log\left(F\right)^{3}+15\,b^{3}c^{2}d^{5}x^{4}\log\left(F\right)^{3}+20\,b^{3}c^{3}d^{4}x^{3}\log\left(F\right)^{3}+15\,b^{3}c\cdots\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] -1/3*(2*F^a*d^6*x^6 + 12*F^a*c*d^5*x^5 + 30*F^a*c^2*d^4*x^4 + 2*F
^a*c^6 - 2*F^a*b*c^3*log(F) + F^a*b^2*log(F)^2 + 2*(20*F^a*c^3*d^
3 - F^a*b*d^3*log(F))*x^3 + 6*(5*F^a*c^4*d^2 - F^a*b*c*d^2*log(F)
)*x^2 + 6*(2*F^a*c^5*d - F^a*b*c^2*d*log(F))*x)*F^(b/(d^3*x^3 + 3
*c*d^2*x^2 + 3*c^2*d*x + c^3))/(b^3*d^7*x^6*log(F)^3 + 6*b^3*c*d^
6*x^5*log(F)^3 + 15*b^3*c^2*d^5*x^4*log(F)^3 + 20*b^3*c^3*d^4*x^3
*log(F)^3 + 15*b^3*c^4*d^3*x^2*log(F)^3 + 6*b^3*c^5*d^2*x*log(F)^
3 + b^3*c^6*d*log(F)^3)
```

Fricas [A] time = 0.262283, size = 358, normalized size = 3.73

$$-\frac{\left(2\,d^{6}x^{6}+12\,cd^{5}x^{5}+30\,c^{2}d^{4}x^{4}+40\,c^{3}d^{3}x^{3}+30\,c^{4}d^{2}x^{2}+12\,c^{5}dx+2\,c^{6}+b^{2}\log\left(F\right)^{2}-2\left(bd^{3}x^{3}+3\,bcd^{2}x^{2}+3\,bc^{2}dx+bc\cdots\right.\right.}{3\left(b^{3}d^{7}x^{6}+6\,b^{3}cd^{6}x^{5}+15\,b^{3}c^{2}d^{5}x^{4}+20\,b^{3}c^{3}d^{4}x^{3}+15\,b^{3}c^{4}d^{3}x^{2}+6\,b^{3}c^{5}d^{2}x+b^{3}c^{6}d\right)\log\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] -1/3*(2*d^6*x^6 + 12*c*d^5*x^5 + 30*c^2*d^4*x^4 + 40*c^3*d^3*x^3
+ 30*c^4*d^2*x^2 + 12*c^5*d*x + 2*c^6 + b^2*log(F)^2 - 2*(b*d^3*x
^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)*log(F))*F^((a*d^3*x^3 +
 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2
+ 3*c^2*d*x + c^3))/((b^3*d^7*x^6 + 6*b^3*c*d^6*x^5 + 15*b^3*c^2*
d^5*x^4 + 20*b^3*c^3*d^4*x^3 + 15*b^3*c^4*d^3*x^2 + 6*b^3*c^5*d^2
*x + b^3*c^6*d)*log(F)^3)
```

Sympy [A] time = 0.70878, size = 270, normalized size = 2.81

$$\frac{F^{a+\frac{b}{(c+dx)^3}}\left(-b^2\log(F)^2+2bc^3\log(F)+6bc^2dx\log(F)+6bcd^2x^2\log(F)+2bd^3x^3\log(F)-2c^6-12c^5dx-30c^4d^2x^2-40c^3\right.}{3b^3c^6d\log(F)^3+18b^3c^5d^2x\log(F)^3+45b^3c^4d^3x^2\log(F)^3+60b^3c^3d^4x^3\log(F)^3+45b^3c^2d^5x^4\log(F)^3+18b^3cd^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**10,x)
```

```
[Out] F**(a + b/(c + d*x)**3)*(-b**2*log(F)**2 + 2*b*c**3*log(F) + 6*b*
c**2*d*x*log(F) + 6*b*c*d**2*x**2*log(F) + 2*b*d**3*x**3*log(F) -
 2*c**6 - 12*c**5*d*x - 30*c**4*d**2*x**2 - 40*c**3*d**3*x**3 - 3
0*c**2*d**4*x**4 - 12*c*d**5*x**5 - 2*d**6*x**6)/(3*b**3*c**6*d*l
og(F)**3 + 18*b**3*c**5*d**2*x*log(F)**3 + 45*b**3*c**4*d**3*x**2
*log(F)**3 + 60*b**3*c**3*d**4*x**3*log(F)**3 + 45*b**3*c**2*d**5
*x**4*log(F)**3 + 18*b**3*c*d**6*x**5*log(F)**3 + 3*b**3*d**7*x**
6*log(F)**3)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^10,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^10, x)
```

3.350 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^{13}} dx$

Optimal. Leaf size=123

$$\frac{2F^{a+\frac{b}{(c+dx)^3}}}{b^4d\log^4(F)} - \frac{2F^{a+\frac{b}{(c+dx)^3}}}{b^3d\log^3(F)(c+dx)^3} + \frac{F^{a+\frac{b}{(c+dx)^3}}}{b^2d\log^2(F)(c+dx)^6} - \frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)(c+dx)^9}$$

```
[Out] (2*F^(a + b/(c + d*x)^3))/(b^4*d*Log[F]^4) - (2*F^(a + b/(c + d*x
)^3))/(b^3*d*(c + d*x)^3*Log[F]^3) + F^(a + b/(c + d*x)^3)/(b^2*d
*(c + d*x)^6*Log[F]^2) - F^(a + b/(c + d*x)^3)/(3*b*d*(c + d*x)^9
*Log[F])
```

Rubi [A] time = 0.307502, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$\frac{2F^{a+\frac{b}{(c+dx)^3}}}{b^4d\log^4(F)} - \frac{2F^{a+\frac{b}{(c+dx)^3}}}{b^3d\log^3(F)(c+dx)^3} + \frac{F^{a+\frac{b}{(c+dx)^3}}}{b^2d\log^2(F)(c+dx)^6} - \frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\log(F)(c+dx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^13,x]
```

```
[Out] (2*F^(a + b/(c + d*x)^3))/(b^4*d*Log[F]^4) - (2*F^(a + b/(c + d*x
)^3))/(b^3*d*(c + d*x)^3*Log[F]^3) + F^(a + b/(c + d*x)^3)/(b^2*d
*(c + d*x)^6*Log[F]^2) - F^(a + b/(c + d*x)^3)/(3*b*d*(c + d*x)^9
*Log[F])
```

Rubi in Sympy [A] time = 32.7084, size = 109, normalized size = 0.89

$$-\frac{F^{a+\frac{b}{(c+dx)^3}}}{3bd\,(c+dx)^9\log(F)} + \frac{F^{a+\frac{b}{(c+dx)^3}}}{b^2d\,(c+dx)^6\log(F)^2} - \frac{2F^{a+\frac{b}{(c+dx)^3}}}{b^3d\,(c+dx)^3\log(F)^3} + \frac{2F^{a+\frac{b}{(c+dx)^3}}}{b^4d\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**13,x)
```

```
[Out] -F**(a + b/(c + d*x)**3)/(3*b*d*(c + d*x)**9*log(F)) + F**(a + b/
(c + d*x)**3)/(b**2*d*(c + d*x)**6*log(F)**2) - 2*F**(a + b/(c +
d*x)**3)/(b**3*d*(c + d*x)**3*log(F)**3) + 2*F**(a + b/(c + d*x)*
*3)/(b**4*d*log(F)**4)
```

Mathematica [A] time = 0.0660496, size = 73, normalized size = 0.59

$$\frac{F^{a+\frac{b}{(c+dx)^3}}\left(-\frac{b^3\log^3(F)}{(c+dx)^9} + \frac{3b^2\log^2(F)}{(c+dx)^6} - \frac{6b\log(F)}{(c+dx)^3} + 6\right)}{3b^4d\log^4(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^13,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(6 - (6*b*Log[F])/(c + d*x)^3 + (3*b^2*Log
[F]^2)/(c + d*x)^6 - (b^3*Log[F]^3)/(c + d*x)^9))/(3*b^4*d*Log[F]
```

```
^4)
```

Maple [B] time = 0.248, size = 641, normalized size = 5.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^13,x)
```

```
[Out] (-1/3*d^2*(-1320*c^9+504*ln(F)*b*c^6-60*ln(F)^2*b^2*c^3+ln(F)^3*b
^3)/ln(F)^4/b^4*x^3*exp((a+b/(d*x+c)^3)*ln(F))+d^5*(1848*c^6-168*
ln(F)*b*c^3+ln(F)^2*b^2)/ln(F)^4/b^4*x^6*exp((a+b/(d*x+c)^3)*ln(F
))-2*d^8*(-220*c^3+b*ln(F))/ln(F)^4/b^4*x^9*exp((a+b/(d*x+c)^3)*l
n(F))+132*d^9*c^2/ln(F)^4/b^4*x^10*exp((a+b/(d*x+c)^3)*ln(F))+24*
d^10*c/ln(F)^4/b^4*x^11*exp((a+b/(d*x+c)^3)*ln(F))-1/3*(-6*c^9+6*
ln(F)*b*c^6-3*ln(F)^2*b^2*c^3+ln(F)^3*b^3)*c^3/b^4/ln(F)^4/d*exp(
(a+b/(d*x+c)^3)*ln(F))-c^2*(-24*c^9+18*ln(F)*b*c^6-6*ln(F)^2*b^2*
c^3+ln(F)^3*b^3)/b^4/ln(F)^4*x*exp((a+b/(d*x+c)^3)*ln(F))+2*d^11/
ln(F)^4/b^4*x^12*exp((a+b/(d*x+c)^3)*ln(F))-c*d*(-132*c^9+72*ln(F
)*b*c^6-15*ln(F)^2*b^2*c^3+ln(F)^3*b^3)/ln(F)^4/b^4*x^2*exp((a+b/
(d*x+c)^3)*ln(F))+3*c^2*d^3*(330*c^6-84*ln(F)*b*c^3+5*ln(F)^2*b^2
)/ln(F)^4/b^4*x^4*exp((a+b/(d*x+c)^3)*ln(F))+6*c*d^4*(264*c^6-42*
ln(F)*b*c^3+ln(F)^2*b^2)/ln(F)^4/b^4*x^5*exp((a+b/(d*x+c)^3)*ln(F
))-72*c^2*d^6*(-22*c^3+b*ln(F))/ln(F)^4/b^4*x^7*exp((a+b/(d*x+c)^
3)*ln(F))-18*c*d^7*(-55*c^3+b*ln(F))/ln(F)^4/b^4*x^8*exp((a+b/(d*
x+c)^3)*ln(F)))/(d*x+c)^12
```

Maxima [A] time = 0.840277, size = 684, normalized size = 5.56

$$\frac{\left(6\,F^{a}d^{9}x^{9}+54\,F^{a}cd^{8}x^{8}+216\,F^{a}c^{2}d^{7}x^{7}+6\,F^{a}c^{9}-6\,F^{a}bc^{6}\log\left(F\right)+3\,F^{a}b^{2}c^{3}\log\left(F\right)^{2}+6\,\left(84\,F^{a}c^{3}d^{6}-F^{a}bd^{6}\log\left(F\right)\right)x^{6}-\ldots}{3\,\left(b^{4}d^{10}x^{9}\log\left(F\right)^{4}+9\,b^{4}cd^{9}\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^13,x, algorithm="maxima")
```

```
[Out] 1/3*(6*F^a*d^9*x^9 + 54*F^a*c*d^8*x^8 + 216*F^a*c^2*d^7*x^7 + 6*F
^a*c^9 - 6*F^a*b*c^6*log(F) + 3*F^a*b^2*c^3*log(F)^2 + 6*(84*F^a*
c^3*d^6 - F^a*b*d^6*log(F))*x^6 - F^a*b^3*log(F)^3 + 36*(21*F^a*c
^4*d^5 - F^a*b*c*d^5*log(F))*x^5 + 18*(42*F^a*c^5*d^4 - 5*F^a*b*c
^2*d^4*log(F))*x^4 + 3*(168*F^a*c^6*d^3 - 40*F^a*b*c^3*d^3*log(F)
 + F^a*b^2*d^3*log(F)^2)*x^3 + 9*(24*F^a*c^7*d^2 - 10*F^a*b*c^4*d
^2*log(F) + F^a*b^2*c*d^2*log(F)^2)*x^2 + 9*(6*F^a*c^8*d - 4*F^a*
b*c^5*d*log(F) + F^a*b^2*c^2*d*log(F)^2)*x)*F^(b/(d^3*x^3 + 3*c*d
^2*x^2 + 3*c^2*d*x + c^3))/(b^4*d^10*x^9*log(F)^4 + 9*b^4*c*d^9*x
^8*log(F)^4 + 36*b^4*c^2*d^8*x^7*log(F)^4 + 84*b^4*c^3*d^7*x^6*lo
g(F)^4 + 126*b^4*c^4*d^6*x^5*log(F)^4 + 126*b^4*c^5*d^5*x^4*log(F
)^4 + 84*b^4*c^6*d^4*x^3*log(F)^4 + 36*b^4*c^7*d^3*x^2*log(F)^4 +
 9*b^4*c^8*d^2*x*log(F)^4 + b^4*c^9*d*log(F)^4)
```

Fricas [A] time = 0.294662, size = 571, normalized size = 4.64

$$\frac{\left(6\,d^{9}x^{9}+54\,cd^{8}x^{8}+216\,c^{2}d^{7}x^{7}+504\,c^{3}d^{6}x^{6}+756\,c^{4}d^{5}x^{5}+756\,c^{5}d^{4}x^{4}+504\,c^{6}d^{3}x^{3}+216\,c^{7}d^{2}x^{2}+54\,c^{8}dx+6\,c^{9}-b^{3}\log\ldots}{3\,\left(b^{4}d^{10}x^{9}+9\,b^{4}cd^{9}x^{8}+36\,b^{4}c^{2}d^{8}x^{7}+84\,b^{4}c^{3}\ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^13,x, algorithm="fricas")
```

```
[Out] 1/3*(6*d^9*x^9 + 54*c*d^8*x^8 + 216*c^2*d^7*x^7 + 504*c^3*d^6*x^6
 + 756*c^4*d^5*x^5 + 756*c^5*d^4*x^4 + 504*c^6*d^3*x^3 + 216*c^7*
d^2*x^2 + 54*c^8*d*x + 6*c^9 - b^3*log(F)^3 + 3*(b^2*d^3*x^3 + 3*
b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*log(F)^2 - 6*(b*d^6*x^6
+ 6*b*c*d^5*x^5 + 15*b*c^2*d^4*x^4 + 20*b*c^3*d^3*x^3 + 15*b*c^4*
d^2*x^2 + 6*b*c^5*d*x + b*c^6)*log(F))*F^((a*d^3*x^3 + 3*a*c*d^2*
x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x
 + c^3))/((b^4*d^10*x^9 + 9*b^4*c*d^9*x^8 + 36*b^4*c^2*d^8*x^7 +
84*b^4*c^3*d^7*x^6 + 126*b^4*c^4*d^6*x^5 + 126*b^4*c^5*d^5*x^4 +
84*b^4*c^6*d^4*x^3 + 36*b^4*c^7*d^3*x^2 + 9*b^4*c^8*d^2*x + b^4*c
^9*d)*log(F)^4)
```

Sympy [A] time = 0.960979, size = 484, normalized size = 3.93

$$\frac{F^{a+\frac{b}{(c+dx)^3}}\left(-b^3\log(F)^3+3b^2c^3\log(F)^2+9b^2c^2dx\log(F)^2+9b^2cd^2x^2\log(F)^2+3b^2d^3x^3\log(F)^2-6bc^6\log(F)-36bc^5dx\log\right.}{3b^4c^9d\log(F)^4+27b^4c^8d^2x\log(F)^4+108b^4c^7d^3x^2\log(F)^4+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**13,x)
```

```
[Out] F**(a + b/(c + d*x)**3)*(-b**3*log(F)**3 + 3*b**2*c**3*log(F)**2
+ 9*b**2*c**2*d*x*log(F)**2 + 9*b**2*c*d**2*x**2*log(F)**2 + 3*b*
*2*d**3*x**3*log(F)**2 - 6*b*c**6*log(F) - 36*b*c**5*d*x*log(F) -
 90*b*c**4*d**2*x**2*log(F) - 120*b*c**3*d**3*x**3*log(F) - 90*b*
c**2*d**4*x**4*log(F) - 36*b*c*d**5*x**5*log(F) - 6*b*d**6*x**6*l
og(F) + 6*c**9 + 54*c**8*d*x + 216*c**7*d**2*x**2 + 504*c**6*d**3
*x**3 + 756*c**5*d**4*x**4 + 756*c**4*d**5*x**5 + 504*c**3*d**6*x
**6 + 216*c**2*d**7*x**7 + 54*c*d**8*x**8 + 6*d**9*x**9)/(3*b**4*
c**9*d*log(F)**4 + 27*b**4*c**8*d**2*x*log(F)**4 + 108*b**4*c**7*
d**3*x**2*log(F)**4 + 252*b**4*c**6*d**4*x**3*log(F)**4 + 378*b**
4*c**5*d**5*x**4*log(F)**4 + 378*b**4*c**4*d**6*x**5*log(F)**4 +
252*b**4*c**3*d**7*x**6*log(F)**4 + 108*b**4*c**2*d**8*x**7*log(F
)**4 + 27*b**4*c*d**9*x**8*log(F)**4 + 3*b**4*d**10*x**9*log(F)**
4)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^13,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^13, x)
```

3.351 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^{16}}\,dx$

Optimal. Leaf size=31

$$-\frac{F^a\text{Gamma}\left(5,-\frac{b\log(F)}{(c+dx)^3}\right)}{3b^5d\log^5(F)}$$

```
[Out] -(F^a*Gamma[5, -((b*Log[F])/(c + d*x)^3)])/(3*b^5*d*Log[F]^5)
```

Rubi [A] time = 0.0717223, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\text{Gamma}\left(5,-\frac{b\log(F)}{(c+dx)^3}\right)}{3b^5d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^16,x]
```

```
[Out] -(F^a*Gamma[5, -((b*Log[F])/(c + d*x)^3)])/(3*b^5*d*Log[F]^5)
```

Rubi in Sympy [A] time = 6.61121, size = 31, normalized size = 1.

$$-\frac{F^a\left(5,-\frac{b\log(F)}{(c+dx)^3}\right)}{3b^5d\log(F)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**16,x)
```

```
[Out] -F**a*Gamma(5, -b*log(F)/(c + d*x)**3)/(3*b**5*d*log(F)**5)
```

Mathematica [B] time = 0.0886641, size = 89, normalized size = 2.87

$$\frac{F^{a+\frac{b}{(c+dx)^3}}\left(-\frac{b^4\log^4(F)}{(c+dx)^{12}}+\frac{4b^3\log^3(F)}{(c+dx)^9}-\frac{12b^2\log^2(F)}{(c+dx)^6}+\frac{24b\log(F)}{(c+dx)^3}-24\right)}{3b^5d\log^5(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^16,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(-24 + (24*b*Log[F])/(c + d*x)^3 - (12*b^2
*Log[F]^2)/(c + d*x)^6 + (4*b^3*Log[F]^3)/(c + d*x)^9 - (b^4*Log[
F]^4)/(c + d*x)^12))/(3*b^5*d*Log[F]^5)
```

Maple [B] time = 0.382, size = 889, normalized size = 28.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^16,x)
```

```
[Out] (-1/3*(24*c^12-24*ln(F)*b*c^9+12*ln(F)^2*b^2*c^6-4*b^3*c^3*ln(F)^
3+ln(F)^4*b^4)*c^3/b^5/ln(F)^5/d*exp((a+b/(d*x+c)^3)*ln(F))-c^2*(
120*c^12-96*ln(F)*b*c^9+36*ln(F)^2*b^2*c^6-8*b^3*c^3*ln(F)^3+ln(F
)^4*b^4)/b^5/ln(F)^5*x*exp((a+b/(d*x+c)^3)*ln(F))-1/3*d^2*(10920*
c^12-5280*ln(F)*b*c^9+1008*ln(F)^2*b^2*c^6-80*b^3*c^3*ln(F)^3+ln(
F)^4*b^4)/ln(F)^5/b^5*x^3*exp((a+b/(d*x+c)^3)*ln(F))+4/3*d^5*(-30
030*c^9+5544*ln(F)*b*c^6-252*ln(F)^2*b^2*c^3+ln(F)^3*b^3)/ln(F)^5
/b^5*x^6*exp((a+b/(d*x+c)^3)*ln(F))-4*d^8*(10010*c^6-440*ln(F)*b*
c^3+ln(F)^2*b^2)/ln(F)^5/b^5*x^9*exp((a+b/(d*x+c)^3)*ln(F))+8*d^1
1*(-455*c^3+b*ln(F))/ln(F)^5/b^5*x^12*exp((a+b/(d*x+c)^3)*ln(F))-
840*d^12*c^2/ln(F)^5/b^5*x^13*exp((a+b/(d*x+c)^3)*ln(F))-120*d^13
*c/ln(F)^5/b^5*x^14*exp((a+b/(d*x+c)^3)*ln(F))-8*d^14/ln(F)^5/b^5
*x^15*exp((a+b/(d*x+c)^3)*ln(F))-d*c*(840*c^12-528*ln(F)*b*c^9+14
4*ln(F)^2*b^2*c^6-20*b^3*c^3*ln(F)^3+ln(F)^4*b^4)/b^5/ln(F)^5*x^2
*exp((a+b/(d*x+c)^3)*ln(F))+4*c^2*d^3*(-2730*c^9+990*ln(F)*b*c^6-
126*ln(F)^2*b^2*c^3+5*ln(F)^3*b^3)/ln(F)^5/b^5*x^4*exp((a+b/(d*x+
c)^3)*ln(F))+8*c*d^4*(-3003*c^9+792*ln(F)*b*c^6-63*ln(F)^2*b^2*c^
3+ln(F)^3*b^3)/ln(F)^5/b^5*x^5*exp((a+b/(d*x+c)^3)*ln(F))-72*c^2*
d^6*(715*c^6-88*ln(F)*b*c^3+2*ln(F)^2*b^2)/ln(F)^5/b^5*x^7*exp((a
+b/(d*x+c)^3)*ln(F))-36*c*d^7*(1430*c^6-110*ln(F)*b*c^3+ln(F)^2*b
^2)/ln(F)^5/b^5*x^8*exp((a+b/(d*x+c)^3)*ln(F))+264*c^2*d^9*(-91*c
^3+2*b*ln(F))/ln(F)^5/b^5*x^10*exp((a+b/(d*x+c)^3)*ln(F))+24*c*d^
10*(-455*c^3+4*b*ln(F))/ln(F)^5/b^5*x^11*exp((a+b/(d*x+c)^3)*ln(F
)))/(d*x+c)^15
```

Maxima [A] time = 0.829217, size = 1040, normalized size = 33.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^16,x, algorithm="maxima")
```

```
[Out] -1/3*(24*F^a*d^12*x^12 + 288*F^a*c*d^11*x^11 + 1584*F^a*c^2*d^10*
x^10 + 24*F^a*c^12 - 24*F^a*b*c^9*log(F) + 12*F^a*b^2*c^6*log(F)^
2 + 24*(220*F^a*c^3*d^9 - F^a*b*d^9*log(F))*x^9 - 4*F^a*b^3*c^3*l
og(F)^3 + 216*(55*F^a*c^4*d^8 - F^a*b*c*d^8*log(F))*x^8 + F^a*b^4
*log(F)^4 + 864*(22*F^a*c^5*d^7 - F^a*b*c^2*d^7*log(F))*x^7 + 12*
(1848*F^a*c^6*d^6 - 168*F^a*b*c^3*d^6*log(F) + F^a*b^2*d^6*log(F)
^2)*x^6 + 72*(264*F^a*c^7*d^5 - 42*F^a*b*c^4*d^5*log(F) + F^a*b^2
*c*d^5*log(F)^2)*x^5 + 36*(330*F^a*c^8*d^4 - 84*F^a*b*c^5*d^4*log
(F) + 5*F^a*b^2*c^2*d^4*log(F)^2)*x^4 + 4*(1320*F^a*c^9*d^3 - 504
*F^a*b*c^6*d^3*log(F) + 60*F^a*b^2*c^3*d^3*log(F)^2 - F^a*b^3*d^3
*log(F)^3)*x^3 + 12*(132*F^a*c^10*d^2 - 72*F^a*b*c^7*d^2*log(F) +
 15*F^a*b^2*c^4*d^2*log(F)^2 - F^a*b^3*c*d^2*log(F)^3)*x^2 + 12*(
24*F^a*c^11*d - 18*F^a*b*c^8*d*log(F) + 6*F^a*b^2*c^5*d*log(F)^2
- F^a*b^3*c^2*d*log(F)^3)*x)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*
d*x + c^3))/(b^5*d^13*x^12*log(F)^5 + 12*b^5*c*d^12*x^11*log(F)^5
 + 66*b^5*c^2*d^11*x^10*log(F)^5 + 220*b^5*c^3*d^10*x^9*log(F)^5
+ 495*b^5*c^4*d^9*x^8*log(F)^5 + 792*b^5*c^5*d^8*x^7*log(F)^5 + 9
24*b^5*c^6*d^7*x^6*log(F)^5 + 792*b^5*c^7*d^6*x^5*log(F)^5 + 495*
b^5*c^8*d^5*x^4*log(F)^5 + 220*b^5*c^9*d^4*x^3*log(F)^5 + 66*b^5*
c^10*d^3*x^2*log(F)^5 + 12*b^5*c^11*d^2*x*log(F)^5 + b^5*c^12*d*l
og(F)^5)
```

Fricas [A] time = 0.321571, size = 838, normalized size = 27.03

$$-\frac{\left(24\,d^{12}x^{12} + 288\,cd^{11}x^{11} + 1584\,c^{2}d^{10}x^{10} + 5280\,c^{3}d^{9}x^{9} + 11880\,c^{4}d^{8}x^{8} + 19008\,c^{5}d^{7}x^{7} + 22176\,c^{6}d^{6}x^{6} + 19008\,c^{7}d^{5}x^{5} + 1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^16,x, algorithm="fricas")
```

```
[Out] -1/3*(24*d^12*x^12 + 288*c*d^11*x^11 + 1584*c^2*d^10*x^10 + 5280*
c^3*d^9*x^9 + 11880*c^4*d^8*x^8 + 19008*c^5*d^7*x^7 + 22176*c^6*d
^6*x^6 + 19008*c^7*d^5*x^5 + 11880*c^8*d^4*x^4 + 5280*c^9*d^3*x^3
 + 1584*c^10*d^2*x^2 + 288*c^11*d*x + 24*c^12 + b^4*log(F)^4 - 4*
(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*log(F)^
3 + 12*(b^2*d^6*x^6 + 6*b^2*c*d^5*x^5 + 15*b^2*c^2*d^4*x^4 + 20*b
^2*c^3*d^3*x^3 + 15*b^2*c^4*d^2*x^2 + 6*b^2*c^5*d*x + b^2*c^6)*lo
g(F)^2 - 24*(b*d^9*x^9 + 9*b*c*d^8*x^8 + 36*b*c^2*d^7*x^7 + 84*b*
c^3*d^6*x^6 + 126*b*c^4*d^5*x^5 + 126*b*c^5*d^4*x^4 + 84*b*c^6*d^
3*x^3 + 36*b*c^7*d^2*x^2 + 9*b*c^8*d*x + b*c^9)*log(F))*F^((a*d^3
*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^
2*x^2 + 3*c^2*d*x + c^3))/((b^5*d^13*x^12 + 12*b^5*c*d^12*x^11 +
66*b^5*c^2*d^11*x^10 + 220*b^5*c^3*d^10*x^9 + 495*b^5*c^4*d^9*x^8
 + 792*b^5*c^5*d^8*x^7 + 924*b^5*c^6*d^7*x^6 + 792*b^5*c^7*d^6*x^
5 + 495*b^5*c^8*d^5*x^4 + 220*b^5*c^9*d^4*x^3 + 66*b^5*c^10*d^3*x
^2 + 12*b^5*c^11*d^2*x + b^5*c^12*d)*log(F)^5)
```

Sympy [A] time = 1.59338, size = 760, normalized size = 24.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**16,x)
```

```
[Out] F**(a + b/(c + d*x)**3)*(-b**4*log(F)**4 + 4*b**3*c**3*log(F)**3
+ 12*b**3*c**2*d*x*log(F)**3 + 12*b**3*c*d**2*x**2*log(F)**3 + 4*
b**3*d**3*x**3*log(F)**3 - 12*b**2*c**6*log(F)**2 - 72*b**2*c**5*
d*x*log(F)**2 - 180*b**2*c**4*d**2*x**2*log(F)**2 - 240*b**2*c**3
*d**3*x**3*log(F)**2 - 180*b**2*c**2*d**4*x**4*log(F)**2 - 72*b**
2*c*d**5*x**5*log(F)**2 - 12*b**2*d**6*x**6*log(F)**2 + 24*b*c**9
*log(F) + 216*b*c**8*d*x*log(F) + 864*b*c**7*d**2*x**2*log(F) + 2
016*b*c**6*d**3*x**3*log(F) + 3024*b*c**5*d**4*x**4*log(F) + 3024
*b*c**4*d**5*x**5*log(F) + 2016*b*c**3*d**6*x**6*log(F) + 864*b*c
**2*d**7*x**7*log(F) + 216*b*c*d**8*x**8*log(F) + 24*b*d**9*x**9*
log(F) - 24*c**12 - 288*c**11*d*x - 1584*c**10*d**2*x**2 - 5280*c
**9*d**3*x**3 - 11880*c**8*d**4*x**4 - 19008*c**7*d**5*x**5 - 221
76*c**6*d**6*x**6 - 19008*c**5*d**7*x**7 - 11880*c**4*d**8*x**8 -
 5280*c**3*d**9*x**9 - 1584*c**2*d**10*x**10 - 288*c*d**11*x**11
- 24*d**12*x**12)/(3*b**5*c**12*d*log(F)**5 + 36*b**5*c**11*d**2*
x*log(F)**5 + 198*b**5*c**10*d**3*x**2*log(F)**5 + 660*b**5*c**9*
d**4*x**3*log(F)**5 + 1485*b**5*c**8*d**5*x**4*log(F)**5 + 2376*b
**5*c**7*d**6*x**5*log(F)**5 + 2772*b**5*c**6*d**7*x**6*log(F)**5
 + 2376*b**5*c**5*d**8*x**7*log(F)**5 + 1485*b**5*c**4*d**9*x**8*
log(F)**5 + 660*b**5*c**3*d**10*x**9*log(F)**5 + 198*b**5*c**2*d*
*11*x**10*log(F)**5 + 36*b**5*c*d**12*x**11*log(F)**5 + 3*b**5*d*
*13*x**12*log(F)**5)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^{16}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^16,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^16, x)
```

3.352 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^{19}}\,dx$

Optimal. Leaf size=31

$$\frac{F^a\text{Gamma}\left(6,-\frac{b\log(F)}{(c+dx)^3}\right)}{3b^6d\log^6(F)}$$

```
[Out] (F^a*Gamma[6, -((b*Log[F])/(c + d*x)^3)])/(3*b^6*d*Log[F]^6)
```

Rubi [A] time = 0.0716672, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(6,-\frac{b\log(F)}{(c+dx)^3}\right)}{3b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^19,x]
```

```
[Out] (F^a*Gamma[6, -((b*Log[F])/(c + d*x)^3)])/(3*b^6*d*Log[F]^6)
```

Rubi in Sympy [A] time = 6.66796, size = 29, normalized size = 0.94

$$\frac{F^a\left(6,-\frac{b\log(F)}{(c+dx)^3}\right)}{3b^6d\log(F)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**19,x)
```

```
[Out] F**a*Gamma(6, -b*log(F)/(c + d*x)**3)/(3*b**6*d*log(F)**6)
```

Mathematica [B] time = 0.116854, size = 105, normalized size = 3.39

$$\frac{F^{a+\frac{b}{(c+dx)^3}}\left(-\frac{b^5\log^5(F)}{(c+dx)^{15}}+\frac{5b^4\log^4(F)}{(c+dx)^{12}}-\frac{20b^3\log^3(F)}{(c+dx)^9}+\frac{60b^2\log^2(F)}{(c+dx)^6}-\frac{120b\log(F)}{(c+dx)^3}+120\right)}{3b^6d\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^19,x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(120 - (120*b*Log[F])/(c + d*x)^3 + (60*b^
2*Log[F]^2)/(c + d*x)^6 - (20*b^3*Log[F]^3)/(c + d*x)^9 + (5*b^4*
Log[F]^4)/(c + d*x)^12 - (b^5*Log[F]^5)/(c + d*x)^15))/(3*b^6*d*L
og[F]^6)
```

Maple [B] time = 0.063, size = 733, normalized size = 23.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^19,x)
```

```
[Out] -1/3*(-120*c^15+20*d^6*x^6*b^3*ln(F)^3+ln(F)^5*b^5+20*ln(F)^3*b^3
*c^6+120*ln(F)*b*d^12*x^12-60*ln(F)^2*b^2*d^9*x^9-5*ln(F)^4*b^4*d
^3*x^3+7920*ln(F)*b*c^10*d^2*x^2-2160*ln(F)^2*b^2*c^7*d^2*x^2+144
0*ln(F)*b*c^11*d*x-540*ln(F)^2*b^2*c^8*d*x-15*ln(F)^4*b^4*c*d^2*x
^2-15*ln(F)^4*b^4*c^2*d*x-1800*c^14*d*x+120*ln(F)*b*c^12-60*ln(F)
^2*b^2*c^9-5*ln(F)^4*b^4*c^3-1800*c*d^14*x^14-12600*c^2*d^13*x^13
-54600*c^3*d^12*x^12-163800*c^4*d^11*x^11-360360*c^5*d^10*x^10-60
0600*c^6*d^9*x^9-772200*c^7*d^8*x^8-772200*c^8*d^7*x^7-600600*c^9
*d^6*x^6-360360*c^10*d^5*x^5-163800*c^11*d^4*x^4-54600*c^12*d^3*x
^3-12600*c^13*d^2*x^2-120*d^15*x^15+1440*ln(F)*b*c*d^11*x^11+7920
*ln(F)*b*c^2*d^10*x^10+26400*ln(F)*b*c^3*d^9*x^9+59400*ln(F)*b*c^
4*d^8*x^8-540*ln(F)^2*b^2*c*d^8*x^8+95040*ln(F)*b*c^5*d^7*x^7-216
0*ln(F)^2*b^2*c^2*d^7*x^7+110880*ln(F)*b*c^6*d^6*x^6-5040*ln(F)^2
*b^2*c^3*d^6*x^6+95040*ln(F)*b*c^7*d^5*x^5-7560*ln(F)^2*b^2*c^4*d
^5*x^5+59400*ln(F)*b*c^8*d^4*x^4-7560*ln(F)^2*b^2*c^5*d^4*x^4+264
00*ln(F)*b*c^9*d^3*x^3-5040*ln(F)^2*b^2*c^6*d^3*x^3+400*ln(F)^3*b
^3*c^3*d^3*x^3+300*ln(F)^3*b^3*c^4*d^2*x^2+120*ln(F)^3*b^3*c^5*d*
x+120*c*d^5*x^5*b^3*ln(F)^3+300*ln(F)^3*b^3*c^2*d^4*x^4)/ln(F)^6/
b^6/d/(d*x+c)^15*F^((a*d^3*x^3+3*a*c*d^2*x^2+3*a*c^2*d*x+a*c^3+b)
/(d*x+c)^3)
```

Maxima [A] time = 0.827336, size = 1465, normalized size = 47.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^19,x, algorithm="maxima")
```

```
[Out] 1/3*(120*F^a*d^15*x^15 + 1800*F^a*c*d^14*x^14 + 12600*F^a*c^2*d^1
3*x^13 + 120*F^a*c^15 - 120*F^a*b*c^12*log(F) + 60*F^a*b^2*c^9*lo
g(F)^2 + 120*(455*F^a*c^3*d^12 - F^a*b*d^12*log(F))*x^12 - 20*F^a
*b^3*c^6*log(F)^3 + 360*(455*F^a*c^4*d^11 - 4*F^a*b*c*d^11*log(F)
)*x^11 + 5*F^a*b^4*c^3*log(F)^4 + 3960*(91*F^a*c^5*d^10 - 2*F^a*b
*c^2*d^10*log(F))*x^10 - F^a*b^5*log(F)^5 + 60*(10010*F^a*c^6*d^9
 - 440*F^a*b*c^3*d^9*log(F) + F^a*b^2*d^9*log(F)^2)*x^9 + 540*(14
30*F^a*c^7*d^8 - 110*F^a*b*c^4*d^8*log(F) + F^a*b^2*c*d^8*log(F)^
2)*x^8 + 1080*(715*F^a*c^8*d^7 - 88*F^a*b*c^5*d^7*log(F) + 2*F^a*
b^2*c^2*d^7*log(F)^2)*x^7 + 20*(30030*F^a*c^9*d^6 - 5544*F^a*b*c^
6*d^6*log(F) + 252*F^a*b^2*c^3*d^6*log(F)^2 - F^a*b^3*d^6*log(F)^
3)*x^6 + 120*(3003*F^a*c^10*d^5 - 792*F^a*b*c^7*d^5*log(F) + 63*F
^a*b^2*c^4*d^5*log(F)^2 - F^a*b^3*c*d^5*log(F)^3)*x^5 + 60*(2730*
F^a*c^11*d^4 - 990*F^a*b*c^8*d^4*log(F) + 126*F^a*b^2*c^5*d^4*log
(F)^2 - 5*F^a*b^3*c^2*d^4*log(F)^3)*x^4 + 5*(10920*F^a*c^12*d^3 -
 5280*F^a*b*c^9*d^3*log(F) + 1008*F^a*b^2*c^6*d^3*log(F)^2 - 80*F
^a*b^3*c^3*d^3*log(F)^3 + F^a*b^4*d^3*log(F)^4)*x^3 + 15*(840*F^a
*c^13*d^2 - 528*F^a*b*c^10*d^2*log(F) + 144*F^a*b^2*c^7*d^2*log(F
)^2 - 20*F^a*b^3*c^4*d^2*log(F)^3 + F^a*b^4*c*d^2*log(F)^4)*x^2 +
 15*(120*F^a*c^14*d - 96*F^a*b*c^11*d*log(F) + 36*F^a*b^2*c^8*d*l
og(F)^2 - 8*F^a*b^3*c^5*d*log(F)^3 + F^a*b^4*c^2*d*log(F)^4)*x)*F
^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(b^6*d^16*x^15*log
(F)^6 + 15*b^6*c*d^15*x^14*log(F)^6 + 105*b^6*c^2*d^14*x^13*log(F
)^6 + 455*b^6*c^3*d^13*x^12*log(F)^6 + 1365*b^6*c^4*d^12*x^11*log
(F)^6 + 3003*b^6*c^5*d^11*x^10*log(F)^6 + 5005*b^6*c^6*d^10*x^9*l
og(F)^6 + 6435*b^6*c^7*d^9*x^8*log(F)^6 + 6435*b^6*c^8*d^8*x^7*lo
g(F)^6 + 5005*b^6*c^9*d^7*x^6*log(F)^6 + 3003*b^6*c^10*d^6*x^5*lo
g(F)^6 + 1365*b^6*c^11*d^5*x^4*log(F)^6 + 455*b^6*c^12*d^4*x^3*lo
g(F)^6 + 105*b^6*c^13*d^3*x^2*log(F)^6 + 15*b^6*c^14*d^2*x*log(F)
^6 + b^6*c^15*d*log(F)^6)
```

Fricas [A] time = 0.398646, size = 1165, normalized size = 37.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^19,x, algorithm="fricas")
```

```
[Out] 1/3*(120*d^15*x^15 + 1800*c*d^14*x^14 + 12600*c^2*d^13*x^13 + 546
00*c^3*d^12*x^12 + 163800*c^4*d^11*x^11 + 360360*c^5*d^10*x^10 +
600600*c^6*d^9*x^9 + 772200*c^7*d^8*x^8 + 772200*c^8*d^7*x^7 + 60
0600*c^9*d^6*x^6 + 360360*c^10*d^5*x^5 + 163800*c^11*d^4*x^4 + 54
600*c^12*d^3*x^3 + 12600*c^13*d^2*x^2 + 1800*c^14*d*x + 120*c^15
- b^5*log(F)^5 + 5*(b^4*d^3*x^3 + 3*b^4*c*d^2*x^2 + 3*b^4*c^2*d*x
 + b^4*c^3)*log(F)^4 - 20*(b^3*d^6*x^6 + 6*b^3*c*d^5*x^5 + 15*b^3
*c^2*d^4*x^4 + 20*b^3*c^3*d^3*x^3 + 15*b^3*c^4*d^2*x^2 + 6*b^3*c^
5*d*x + b^3*c^6)*log(F)^3 + 60*(b^2*d^9*x^9 + 9*b^2*c*d^8*x^8 + 3
6*b^2*c^2*d^7*x^7 + 84*b^2*c^3*d^6*x^6 + 126*b^2*c^4*d^5*x^5 + 12
6*b^2*c^5*d^4*x^4 + 84*b^2*c^6*d^3*x^3 + 36*b^2*c^7*d^2*x^2 + 9*b
^2*c^8*d*x + b^2*c^9)*log(F)^2 - 120*(b*d^12*x^12 + 12*b*c*d^11*x
^11 + 66*b*c^2*d^10*x^10 + 220*b*c^3*d^9*x^9 + 495*b*c^4*d^8*x^8
+ 792*b*c^5*d^7*x^7 + 924*b*c^6*d^6*x^6 + 792*b*c^7*d^5*x^5 + 495
*b*c^8*d^4*x^4 + 220*b*c^9*d^3*x^3 + 66*b*c^10*d^2*x^2 + 12*b*c^1
1*d*x + b*c^12)*log(F))*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d
*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/((b^6*
d^16*x^15 + 15*b^6*c*d^15*x^14 + 105*b^6*c^2*d^14*x^13 + 455*b^6*
c^3*d^13*x^12 + 1365*b^6*c^4*d^12*x^11 + 3003*b^6*c^5*d^11*x^10 +
 5005*b^6*c^6*d^10*x^9 + 6435*b^6*c^7*d^9*x^8 + 6435*b^6*c^8*d^8*
x^7 + 5005*b^6*c^9*d^7*x^6 + 3003*b^6*c^10*d^6*x^5 + 1365*b^6*c^1
1*d^5*x^4 + 455*b^6*c^12*d^4*x^3 + 105*b^6*c^13*d^3*x^2 + 15*b^6*
c^14*d^2*x + b^6*c^15*d)*log(F)^6)
```

Sympy [A] time = 4.79126, size = 1096, normalized size = 35.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**19,x)
```

```
[Out] F**(a + b/(c + d*x)**3)*(-b**5*log(F)**5 + 5*b**4*c**3*log(F)**4
+ 15*b**4*c**2*d*x*log(F)**4 + 15*b**4*c*d**2*x**2*log(F)**4 + 5*
b**4*d**3*x**3*log(F)**4 - 20*b**3*c**6*log(F)**3 - 120*b**3*c**5
*d*x*log(F)**3 - 300*b**3*c**4*d**2*x**2*log(F)**3 - 400*b**3*c**
3*d**3*x**3*log(F)**3 - 300*b**3*c**2*d**4*x**4*log(F)**3 - 120*b
**3*c*d**5*x**5*log(F)**3 - 20*b**3*d**6*x**6*log(F)**3 + 60*b**2
*c**9*log(F)**2 + 540*b**2*c**8*d*x*log(F)**2 + 2160*b**2*c**7*d*
*2*x**2*log(F)**2 + 5040*b**2*c**6*d**3*x**3*log(F)**2 + 7560*b**
2*c**5*d**4*x**4*log(F)**2 + 7560*b**2*c**4*d**5*x**5*log(F)**2 +
 5040*b**2*c**3*d**6*x**6*log(F)**2 + 2160*b**2*c**2*d**7*x**7*lo
g(F)**2 + 540*b**2*c*d**8*x**8*log(F)**2 + 60*b**2*d**9*x**9*log(
F)**2 - 120*b*c**12*log(F) - 1440*b*c**11*d*x*log(F) - 7920*b*c**
10*d**2*x**2*log(F) - 26400*b*c**9*d**3*x**3*log(F) - 59400*b*c**
8*d**4*x**4*log(F) - 95040*b*c**7*d**5*x**5*log(F) - 110880*b*c**
6*d**6*x**6*log(F) - 95040*b*c**5*d**7*x**7*log(F) - 59400*b*c**4
*d**8*x**8*log(F) - 26400*b*c**3*d**9*x**9*log(F) - 7920*b*c**2*d
**10*x**10*log(F) - 1440*b*c*d**11*x**11*log(F) - 120*b*d**12*x**
12*log(F) + 120*c**15 + 1800*c**14*d*x + 12600*c**13*d**2*x**2 +
54600*c**12*d**3*x**3 + 163800*c**11*d**4*x**4 + 360360*c**10*d**
5*x**5 + 600600*c**9*d**6*x**6 + 772200*c**8*d**7*x**7 + 772200*c
**7*d**8*x**8 + 600600*c**6*d**9*x**9 + 360360*c**5*d**10*x**10 +
 163800*c**4*d**11*x**11 + 54600*c**3*d**12*x**12 + 12600*c**2*d*
*13*x**13 + 1800*c*d**14*x**14 + 120*d**15*x**15)/(3*b**6*c**15*d
*log(F)**6 + 45*b**6*c**14*d**2*x*log(F)**6 + 315*b**6*c**13*d**3
*x**2*log(F)**6 + 1365*b**6*c**12*d**4*x**3*log(F)**6 + 4095*b**6
```

```
*c**11*d**5*x**4*log(F)**6 + 9009*b**6*c**10*d**6*x**5*log(F)**6
+ 15015*b**6*c**9*d**7*x**6*log(F)**6 + 19305*b**6*c**8*d**8*x**7
*log(F)**6 + 19305*b**6*c**7*d**9*x**8*log(F)**6 + 15015*b**6*c**
6*d**10*x**9*log(F)**6 + 9009*b**6*c**5*d**11*x**10*log(F)**6 + 4
095*b**6*c**4*d**12*x**11*log(F)**6 + 1365*b**6*c**3*d**13*x**12*
log(F)**6 + 315*b**6*c**2*d**14*x**13*log(F)**6 + 45*b**6*c*d**15
*x**14*log(F)**6 + 3*b**6*d**16*x**15*log(F)**6)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^{19}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^19,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^19, x)
```

3.353 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)^3\,dx$

Optimal. Leaf size=49

$$\frac{F^a(c+dx)^4\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] (F^a*(c + d*x)^4*Gamma[-4/3, -((b*Log[F])/(c + d*x)^3)]*(-((b*Log
[F])/(c + d*x)^3))^(4/3))/(3*d)
```

Rubi [A] time = 0.0750792, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a(c+dx)^4\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x)^3,x]
```

```
[Out] (F^a*(c + d*x)^4*Gamma[-4/3, -((b*Log[F])/(c + d*x)^3)]*(-((b*Log
[F])/(c + d*x)^3))^(4/3))/(3*d)
```

Rubi in Sympy [A] time = 6.06455, size = 48, normalized size = 0.98

$$\frac{F^a\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{4}{3}}(c+dx)^4\left(-\frac{4}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**3,x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**3)**(4/3)*(c + d*x)**4*Gamma(-4/3, -b*
log(F)/(c + d*x)**3)/(3*d)
```

Mathematica [A] time = 0.264532, size = 78, normalized size = 1.59

$$\frac{F^a(c+dx)\left(F^{\frac{b}{(c+dx)^3}}\left(3b\log(F)+(c+dx)^3\right)-3b\log(F)\sqrt[3]{-\frac{b\log(F)}{(c+dx)^3}}\text{Gamma}\left(\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)\right)}{4d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x)^3,x]
```

```
[Out] (F^a*(c + d*x)*(-3*b*Gamma[2/3, -((b*Log[F])/(c + d*x)^3)]*Log[F]
*(-((b*Log[F])/(c + d*x)^3))^(1/3) + F^(b/(c + d*x)^3)*((c + d*x)
^3 + 3*b*Log[F])))/(4*d)
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c)^3,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{4}\left(F^a d^3x^4 + 4\,F^a cd^2x^3 + 6\,F^a c^2dx^2 + \left(4\,F^a c^3 + 3\,F^a b\log\left(F\right)\right)x\right)F^{\frac{b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}} + \int -\frac{3\left(F^a bc^4\log\left(F\right) - 3\,F^a b^2 dx\log\left(F\right)^2\right)F^{\frac{b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}}{4\left(d^4x^4 + 4\,cd^3x^3 + 6\,c^2d^2x^2 + 4\,c^3dx + c^4\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/4*(F^a*d^3*x^4 + 4*F^a*c*d^2*x^3 + 6*F^a*c^2*d*x^2 + (4*F^a*c^3
 + 3*F^a*b*log(F))*x)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c
^3)) + integrate(-3/4*(F^a*b*c^4*log(F) - 3*F^a*b^2*d*x*log(F)^2)
*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^4 + 4*c*d
^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.258317, size = 271, normalized size = 5.53

$$\frac{3\,F^a b^2\left(\frac{2}{3}, -\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)\log\left(F\right)^2 + \left(d^6x^4 + 4\,cd^5x^3 + 6\,c^2d^4x^2 + 4\,c^3d^3x + c^4d^2 + 3\left(bd^3x + bcd^2\right)\log\left(F\right)\right)F^{\frac{ad^3x^3+3\ldots}{d^3x^3\ldots}}}{4\,d^3\left(-\frac{b\log(F)}{d^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] 1/4*(3*F^a*b^2*gamma(2/3, -b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^
2*d*x + c^3))*log(F)^2 + (d^6*x^4 + 4*c*d^5*x^3 + 6*c^2*d^4*x^2 +
 4*c^3*d^3*x + c^4*d^2 + 3*(b*d^3*x + b*c*d^2)*log(F))*F^((a*d^3*
x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2
*x^2 + 3*c^2*d*x + c^3))*(-b*log(F)/d^3)^(2/3))/(d^3*(-b*log(F)/d
^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3*F^(a + b/(d*x + c)^3), x)
```

3.354 $\int F^{a+\frac{b}{(c+dx)^3}}(c+dx)\,dx$

Optimal. Leaf size=49

$$\frac{F^a(c+dx)^2\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] (F^a*(c + d*x)^2*Gamma[-2/3, -((b*Log[F])/(c + d*x)^3)]*(-((b*Log
[F])/(c + d*x)^3))^(2/3))/(3*d)
```

Rubi [A] time = 0.0462715, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{F^a(c+dx)^2\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)*(c + d*x),x]
```

```
[Out] (F^a*(c + d*x)^2*Gamma[-2/3, -((b*Log[F])/(c + d*x)^3)]*(-((b*Log
[F])/(c + d*x)^3))^(2/3))/(3*d)
```

Rubi in Sympy [A] time = 4.26453, size = 48, normalized size = 0.98

$$\frac{F^a\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{2}{3}}(c+dx)^2\left(-\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)*(d*x+c),x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**3)**(2/3)*(c + d*x)**2*Gamma(-2/3, -b*
log(F)/(c + d*x)**3)/(3*d)
```

Mathematica [A] time = 0.0845763, size = 73, normalized size = 1.49

$$\frac{F^a\left(\frac{b\log(F)\text{Gamma}\left(\frac{1}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{\sqrt[3]{-\frac{b\log(F)}{(c+dx)^3}}}+(c+dx)^3F^{\frac{b}{(c+dx)^3}}\right)}{2d(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)*(c + d*x),x]
```

```
[Out] (F^a*(F^(b/(c + d*x)^3)*(c + d*x)^3 + (b*Gamma[1/3, -((b*Log[F])/
(c + d*x)^3)]*Log[F])/(-((b*Log[F])/(c + d*x)^3))^(1/3)))/(2*d*(c
 + d*x))
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}} (dx+c)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)*(d*x+c),x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)*(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(F^{a} d x^{2} + 2\, F^{a} c x\right) F^{\frac{b}{d^{3} x^{3}+3\, c d^{2} x^{2}+3\, c^{2} d x+c^{3}}} + \int \frac{3\left(F^{a} b d^{2} x^{2} \log\left(F\right) + 2\, F^{a} b c d x \log\left(F\right)\right) F^{\frac{b}{d^{3} x^{3}+3\, c d^{2} x^{2}+3\, c^{2} d x+c^{3}}}}{2\left(d^{4} x^{4} + 4\, c d^{3} x^{3} + 6\, c^{2} d^{2} x^{2} + 4\, c^{3} d x + c^{4}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/2*(F^a*d*x^2 + 2*F^a*c*x)*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d
*x + c^3)) + integrate(3/2*(F^a*b*d^2*x^2*log(F) + 2*F^a*b*c*d*x*
log(F))*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^4
+ 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.260288, size = 209, normalized size = 4.27

$$\frac{F^{a} b \Gamma\left(\frac{1}{3}, -\frac{b \log\left(F\right)}{d^{3} x^{3}+3\, c d^{2} x^{2}+3\, c^{2} d x+c^{3}}\right) \log\left(F\right) + \left(d^{3} x^{2} + 2\, c d^{2} x + c^{2} d\right) F^{\frac{a d^{3} x^{3}+3\, a c d^{2} x^{2}+3\, a c^{2} d x+a c^{3}+b}{d^{3} x^{3}+3\, c d^{2} x^{2}+3\, c^{2} d x+c^{3}}} \left(-\frac{b \log\left(F\right)}{d^{3}}\right)^{\frac{1}{3}}}{2\, d^{2} \left(-\frac{b \log\left(F\right)}{d^{3}}\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] 1/2*(F^a*b*gamma(1/3, -b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*
x + c^3))*log(F) + (d^3*x^2 + 2*c*d^2*x + c^2*d)*F^((a*d^3*x^3 +
3*a*c*d^2*x^2 + 3*a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 +
 3*c^2*d*x + c^3))*(-b*log(F)/d^3)^(1/3))/(d^2*(-b*log(F)/d^3)^(1
/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)*(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)F^{a+\frac{b}{(dx+c)^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)*F^(a + b/(d*x + c)^3), x)
```

3.355 $\int F^{a+\frac{b}{(c+dx)^3}}\,dx$

Optimal. Leaf size=47

$$\frac{F^a(c+dx)\sqrt[3]{-\frac{b\log(F)}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

```
[Out] (F^a*(c + d*x)*Gamma[-1/3, -((b*Log[F])/(c + d*x)^3)]*(-((b*Log[F
])/(c + d*x)^3))^(1/3))/(3*d)
```

Rubi [A] time = 0.0179974, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{F^a(c+dx)\sqrt[3]{-\frac{b\log(F)}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3),x]
```

```
[Out] (F^a*(c + d*x)*Gamma[-1/3, -((b*Log[F])/(c + d*x)^3)]*(-((b*Log[F
])/(c + d*x)^3))^(1/3))/(3*d)
```

Rubi in Sympy [A] time = 1.86511, size = 46, normalized size = 0.98

$$\frac{F^a\sqrt[3]{-\frac{b\log(F)}{(c+dx)^3}}(c+dx)\left(-\frac{1}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3),x)
```

```
[Out] F**a*(-b*log(F)/(c + d*x)**3)**(1/3)*(c + d*x)*Gamma(-1/3, -b*log
(F)/(c + d*x)**3)/(3*d)
```

Mathematica [A] time = 0.0733686, size = 72, normalized size = 1.53

$$\frac{bF^a\log(F)\text{Gamma}\left(\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{d(c+dx)^2\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{2/3}}+\frac{(c+dx)F^{a+\frac{b}{(c+dx)^3}}}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3),x]
```

```
[Out] (F^(a + b/(c + d*x)^3)*(c + d*x))/d + (b*F^a*Gamma[2/3, -((b*Log[
F])/(c + d*x)^3)]*Log[F])/(d*(c + d*x)^2*(-((b*Log[F])/(c + d*x)^
3))^(2/3))
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3),x)
```

```
[Out] int(F^(a+b/(d*x+c)^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$3\,F^a b d \int \frac{F^{\frac{b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}\,x}{d^4x^4+4\,cd^3x^3+6\,c^2d^2x^2+4\,c^3dx+c^4}\,dx\log\left(F\right)+F^aF^{\frac{b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 3*F^a*b*d*integrate(F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3
))*x/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x
)*log(F) + F^a*F^(b/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))*x
```

Fricas [A] time = 0.269301, size = 196, normalized size = 4.17

$$\frac{F^a b\,\Gamma\left(\frac{2}{3},-\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)\log\left(F\right)+\left(d^3x+cd^2\right)F^{\frac{ad^3x^3+3\,acd^2x^2+3\,ac^2dx+ac^3+b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}\left(-\frac{b\log(F)}{d^3}\right)^{\frac{2}{3}}}{d^3\left(-\frac{b\log(F)}{d^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] (F^a*b*gamma(2/3, -b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x +
c^3))*log(F) + (d^3*x + c*d^2)*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*
a*c^2*d*x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))
*(-b*log(F)/d^3)^(2/3))/(d^3*(-b*log(F)/d^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3), x)
```

3.356 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^2} dx$

Optimal. Leaf size=49

$$\frac{F^a \text{Gamma}\left(\frac{1}{3}, -\frac{b \log(F)}{(c+dx)^3}\right)}{3d(c+dx)\sqrt[3]{-\frac{b \log(F)}{(c+dx)^3}}}$$

```
[Out] (F^a*Gamma[1/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)*(-((b*
Log[F])/(c + d*x)^3))^(1/3))
```

Rubi [A] time = 0.0778039, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a \text{Gamma}\left(\frac{1}{3}, -\frac{b \log(F)}{(c+dx)^3}\right)}{3d(c+dx)\sqrt[3]{-\frac{b \log(F)}{(c+dx)^3}}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^2,x]
```

```
[Out] (F^a*Gamma[1/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)*(-((b*
Log[F])/(c + d*x)^3))^(1/3))
```

Rubi in Sympy [A] time = 5.9025, size = 44, normalized size = 0.9

$$\frac{F^a\left(\frac{1}{3}, -\frac{b \log(F)}{(c+dx)^3}\right)}{3d\sqrt[3]{-\frac{b \log(F)}{(c+dx)^3}}(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**2,x)
```

```
[Out] F**a*Gamma(1/3, -b*log(F)/(c + d*x)**3)/(3*d*(-b*log(F)/(c + d*x)
**3)**(1/3)*(c + d*x))
```

Mathematica [A] time = 0.0367174, size = 49, normalized size = 1.

$$\frac{F^a \text{Gamma}\left(\frac{1}{3}, -\frac{b \log(F)}{(c+dx)^3}\right)}{3d(c+dx)\sqrt[3]{-\frac{b \log(F)}{(c+dx)^3}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^2,x]
```

[Out] (F^a*Gamma[1/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)*(-((b*Log[F])/(c + d*x)^3))^(1/3))

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int \frac{1}{(dx+c)^2} F^{a+\frac{b}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(F^(a+b/(d*x+c)^3)/(d*x+c)^2,x)

[Out] int(F^(a+b/(d*x+c)^3)/(d*x+c)^2,x)

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^2,x, algorithm="maxima")

[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^2, x)

Fricas [A] time = 0.265686, size = 73, normalized size = 1.49

$$\frac{F^a\,\Gamma\left(\frac{1}{3}, -\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}{3\,d^2\left(-\frac{b\log(F)}{d^3}\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^2,x, algorithm="fricas")

[Out] 1/3*F^a*gamma(1/3, -b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^2*(-b*log(F)/d^3)^(1/3))

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**2,x)

[Out] Timed out

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^2, x)
```

3.357 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^3} dx$

Optimal. Leaf size=49

$$\frac{F^a\text{Gamma}\left(\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d(c+dx)^2\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{2/3}}$$

```
[Out] (F^a*Gamma[2/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)^2*(-((
b*Log[F])/(c + d*x)^3))^(2/3))
```

Rubi [A] time = 0.0770385, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d(c+dx)^2\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^3,x]
```

```
[Out] (F^a*Gamma[2/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)^2*(-((
b*Log[F])/(c + d*x)^3))^(2/3))
```

Rubi in Sympy [A] time = 5.99456, size = 46, normalized size = 0.94

$$\frac{F^a\left(\frac{2}{3},-\frac{b\log{(F)}}{(c+dx)^3}\right)}{3d\left(-\frac{b\log{(F)}}{(c+dx)^3}\right)^{\frac{2}{3}}(c+dx)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**3,x)
```

```
[Out] F**a*Gamma(2/3, -b*log(F)/(c + d*x)**3)/(3*d*(-b*log(F)/(c + d*x)
**3)**(2/3)*(c + d*x)**2)
```

Mathematica [A] time = 0.0437855, size = 49, normalized size = 1.

$$\frac{F^a\text{Gamma}\left(\frac{2}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d(c+dx)^2\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^3,x]
```

```
[Out] (F^a*Gamma[2/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)^2*(-((
b*Log[F])/(c + d*x)^3))^(2/3))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \frac{1}{(dx+c)^3} F^{a+\frac{b}{(dx+c)^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^3,x)

[Out] int(F^(a+b/(d*x+c)^3)/(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^3,x, algorithm="maxima")

[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^3, x)
```

Fricas [A] time = 0.275868, size = 73, normalized size = 1.49

$$\frac{F^a \Gamma\left(\frac{2}{3}, -\frac{b \log(F)}{d^3 x^3 + 3\, c d^2 x^2 + 3\, c^2 d x + c^3}\right)}{3\, d^3 \left(-\frac{b \log(F)}{d^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^3,x, algorithm="fricas")

[Out] 1/3*F^a*gamma(2/3, -b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x +
 c^3))/(d^3*(-b*log(F)/d^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**3,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^3,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^3, x)
```

3.358 $\int \frac{F^{a+\frac{b}{(c+dx)^3}}}{(c+dx)^5}\,dx$

Optimal. Leaf size=49

$$\frac{F^a\text{Gamma}\left(\frac{4}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d(c+dx)^4\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{4/3}}$$

```
[Out] (F^a*Gamma[4/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)^4*(-((
b*Log[F])/(c + d*x)^3))^(4/3))
```

Rubi [A] time = 0.0764427, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{Gamma}\left(\frac{4}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d(c+dx)^4\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x)^3)/(c + d*x)^5,x]
```

```
[Out] (F^a*Gamma[4/3, -((b*Log[F])/(c + d*x)^3)])/(3*d*(c + d*x)^4*(-((
b*Log[F])/(c + d*x)^3))^(4/3))
```

Rubi in Sympy [A] time = 5.97878, size = 46, normalized size = 0.94

$$\frac{F^a\left(\frac{4}{3},-\frac{b\log(F)}{(c+dx)^3}\right)}{3d\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{\frac{4}{3}}(c+dx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**5,x)
```

```
[Out] F**a*Gamma(4/3, -b*log(F)/(c + d*x)**3)/(3*d*(-b*log(F)/(c + d*x)
**3)**(4/3)*(c + d*x)**4)
```

Mathematica [A] time = 0.115838, size = 79, normalized size = 1.61

$$\frac{F^a\left(\text{Gamma}\left(\frac{1}{3},-\frac{b\log(F)}{(c+dx)^3}\right)+3F^{\frac{b}{(c+dx)^3}}\sqrt[3]{-\frac{b\log(F)}{(c+dx)^3}}\right)}{9d(c+dx)^4\left(-\frac{b\log(F)}{(c+dx)^3}\right)^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x)^3)/(c + d*x)^5,x]
```

```
[Out] (F^a*(Gamma[1/3, -((b*Log[F])/(c + d*x)^3)] + 3*F^(b/(c + d*x)^3)
*(-((b*Log[F])/(c + d*x)^3))^(1/3)))/(9*d*(c + d*x)^4*(-((b*Log[F
```

```
])/(c + d*x)^3))^(4/3))
```

Maple [F] time = 0.089, size = 0, normalized size = 0.

$$\int \frac{1}{(dx+c)^5} F^{a+\frac{b}{(dx+c)^3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c)^3)/(d*x+c)^5,x)
```

```
[Out] int(F^(a+b/(d*x+c)^3)/(d*x+c)^5,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^5,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^5, x)
```

Fricas [A] time = 0.278465, size = 209, normalized size = 4.27

$$-\frac{(dx+c)F^a\left(\frac{1}{3}, -\frac{b\log(F)}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)+3\,F^{\frac{ad^3x^3+3\,acd^2x^2+3\,ac^2dx+ac^3+b}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}}d\left(-\frac{b\log(F)}{d^3}\right)^{\frac{1}{3}}}{9\,(bd^3x+bcd^2)\left(-\frac{b\log(F)}{d^3}\right)^{\frac{1}{3}}\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^5,x, algorithm="fricas")
```

```
[Out] -1/9*((d*x + c)*F^a*gamma(1/3, -b*log(F)/(d^3*x^3 + 3*c*d^2*x^2 +
 3*c^2*d*x + c^3)) + 3*F^((a*d^3*x^3 + 3*a*c*d^2*x^2 + 3*a*c^2*d*
x + a*c^3 + b)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))*d*(-b*l
og(F)/d^3)^(1/3))/((b*d^3*x + b*c*d^2)*(-b*log(F)/d^3)^(1/3)*log(
F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c)**3)/(d*x+c)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{(dx+c)^3}}}{(dx+c)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^5,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c)^3)/(d*x + c)^5, x)
```

3.359 $\int F^{a+b(c+dx)^n}(c+dx)^m\,dx$

Optimal. Leaf size=61

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^n\right)^{-\frac{m+1}{n}}\text{Gamma}\left(\frac{m+1}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] -((F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/n, -(b*(c + d*x)^n*Log[F])
])/(d*n*(-(b*(c + d*x)^n*Log[F]))^((1 + m)/n)))
```

Rubi [A] time = 0.0635125, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a(c+dx)^{m+1}\left(-b\log(F)(c+dx)^n\right)^{-\frac{m+1}{n}}\text{Gamma}\left(\frac{m+1}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^m,x]
```

```
[Out] -((F^a*(c + d*x)^(1 + m)*Gamma[(1 + m)/n, -(b*(c + d*x)^n*Log[F])
])/(d*n*(-(b*(c + d*x)^n*Log[F]))^((1 + m)/n)))
```

Rubi in Sympy [A] time = 7.10197, size = 53, normalized size = 0.87

$$-\frac{F^a\left(-b\left(c+dx\right)^n\log\left(F\right)\right)^{-\frac{m+1}{n}}\left(c+dx\right)^{m+1}\left(\frac{m+1}{n},-b\left(c+dx\right)^n\log\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**m,x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(-(m + 1)/n)*(c + d*x)**(m + 1)*G
amma((m + 1)/n, -b*(c + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.0789804, size = 0, normalized size = 0.

$$\int F^{a+b(c+dx)^n}(c+dx)^m\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^m,x]
```

```
[Out] Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^m, x]
```

Maple [F] time = 0.086, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^n}\left(dx+c\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^m,x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)*(d*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*F^((d*x + c)^n*b + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((dx+c)^m F^{(dx+c)^n b+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*F^((d*x + c)^n*b + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^m F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^m*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*F^((d*x + c)^n*b + a), x)
```

3.360 $\int F^{a+b(c+dx)^n}(c+dx)^3\,dx$

Optimal. Leaf size=54

$$-\frac{F^a(c+dx)^4\left(-b\log(F)(c+dx)^n\right)^{-4/n}\operatorname{Gamma}\left(\frac{4}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] -((F^a*(c + d*x)^4*Gamma[4/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(4/n)))
```

Rubi [A] time = 0.0639976, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$-\frac{F^a(c+dx)^4\left(-b\log(F)(c+dx)^n\right)^{-4/n}\operatorname{Gamma}\left(\frac{4}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^3,x]
```

```
[Out] -((F^a*(c + d*x)^4*Gamma[4/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(4/n)))
```

Rubi in Sympy [A] time = 6.61843, size = 48, normalized size = 0.89

$$-\frac{F^a\left(-b\,(c+dx)^n\log(F)\right)^{-\frac{4}{n}}(c+dx)^4\left(\frac{4}{n},-b\,(c+dx)^n\log(F)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**3,x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(-4/n)*(c + d*x)**4*Gamma(4/n, -b
*(c + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.0326696, size = 54, normalized size = 1.

$$-\frac{F^a(c+dx)^4\left(-b\log(F)(c+dx)^n\right)^{-4/n}\operatorname{Gamma}\left(\frac{4}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^3,x]
```

```
[Out] -((F^a*(c + d*x)^4*Gamma[4/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(4/n)))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^n}(dx+c)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^3,x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)*(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^3*F^((d*x + c)^n*b + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3\right)F^{(dx+c)^n b+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] integral((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*F^((d*x + c)^n
*b + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^3 F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3*F^((d*x + c)^n*b + a), x)
```

3.361 $\int F^{a+b(c+dx)^n}(c+dx)^2\,dx$

Optimal. Leaf size=54

$$-\frac{F^a(c+dx)^3\left(-b\log(F)(c+dx)^n\right)^{-3/n}\operatorname{Gamma}\left(\frac{3}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] -((F^a*(c + d*x)^3*Gamma[3/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(3/n)))
```

Rubi [A] time = 0.0626757, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a(c+dx)^3\left(-b\log(F)(c+dx)^n\right)^{-3/n}\operatorname{Gamma}\left(\frac{3}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^2,x]
```

```
[Out] -((F^a*(c + d*x)^3*Gamma[3/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(3/n)))
```

Rubi in Sympy [A] time = 6.01635, size = 48, normalized size = 0.89

$$-\frac{F^a\left(-b\left(c+dx\right)^n\log\left(F\right)\right)^{-\frac{3}{n}}\left(c+dx\right)^3\left(\frac{3}{n},-b\left(c+dx\right)^n\log\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**2,x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(-3/n)*(c + d*x)**3*Gamma(3/n, -b
*(c + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.0297984, size = 54, normalized size = 1.

$$-\frac{F^a(c+dx)^3\left(-b\log(F)(c+dx)^n\right)^{-3/n}\operatorname{Gamma}\left(\frac{3}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^2,x]
```

```
[Out] -((F^a*(c + d*x)^3*Gamma[3/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(3/n)))
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^n}\left(dx+c\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^2,x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)*(d*x+c)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^2 F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^2*F^((d*x + c)^n*b + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(d^2x^2+2\,cdx+c^2\right)F^{(dx+c)^n b+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*F^((d*x + c)^n*b + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^2 F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2*F^((d*x + c)^n*b + a), x)
```

3.362 $\int F^{a+b(c+dx)^n}(c+dx)\,dx$

Optimal. Leaf size=54

$$-\frac{F^a(c+dx)^2\left(-b\log(F)(c+dx)^n\right)^{-2/n}\text{Gamma}\left(\frac{2}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] -((F^a*(c + d*x)^2*Gamma[2/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(2/n)))
```

Rubi [A] time = 0.0401767, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{F^a(c+dx)^2\left(-b\log(F)(c+dx)^n\right)^{-2/n}\text{Gamma}\left(\frac{2}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^n)*(c + d*x),x]
```

```
[Out] -((F^a*(c + d*x)^2*Gamma[2/n, -(b*(c + d*x)^n*Log[F])])/(d*n*(-(b
*(c + d*x)^n*Log[F]))^(2/n)))
```

Rubi in Sympy [A] time = 4.54104, size = 48, normalized size = 0.89

$$-\frac{F^a\left(-b\left(c+dx\right)^n\log\left(F\right)\right)^{-\frac{2}{n}}\left(c+dx\right)^2\left(\frac{2}{n},-b\left(c+dx\right)^n\log\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c),x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(-2/n)*(c + d*x)**2*Gamma(2/n, -b
*(c + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.0643454, size = 0, normalized size = 0.

$$\int F^{a+b(c+dx)^n}(c+dx)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[F^(a + b*(c + d*x)^n)*(c + d*x),x]
```

```
[Out] Integrate[F^(a + b*(c + d*x)^n)*(c + d*x), x]
```

Maple [F] time = 0.062, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^n}\left(dx+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c),x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)*(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)*F^((d*x + c)^n*b + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((dx+c)F^{(dx+c)^n b+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)*F^((d*x + c)^n*b + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)*F^((d*x + c)^n*b + a), x)
```

3.363 $\int F^{a+b(c+dx)^n}\,dx$

Optimal. Leaf size=50

$$-\frac{F^a(c+dx)\left(-b\log(F)(c+dx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] -((F^a*(c + d*x)*Gamma[n^(-1), -(b*(c + d*x)^n*Log[F])])/(d*n*(-(
b*(c + d*x)^n*Log[F]))^n^(-1)))
```

Rubi [A] time = 0.0196655, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{F^a(c+dx)\left(-b\log(F)(c+dx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n),x]
```

```
[Out] -((F^a*(c + d*x)*Gamma[n^(-1), -(b*(c + d*x)^n*Log[F])])/(d*n*(-(
b*(c + d*x)^n*Log[F]))^n^(-1)))
```

Rubi in Sympy [A] time = 2.27071, size = 46, normalized size = 0.92

$$-\frac{F^a\left(-b\left(c+dx\right)^n\log\left(F\right)\right)^{-\frac{1}{n}}\left(c+dx\right)\left(\frac{1}{n},-b\left(c+dx\right)^n\log\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n),x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(-1/n)*(c + d*x)*Gamma(1/n, -b*(c
 + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.0251039, size = 50, normalized size = 1.

$$-\frac{F^a(c+dx)\left(-b\log(F)(c+dx)^n\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n),x]
```

```
[Out] -((F^a*(c + d*x)*Gamma[n^(-1), -(b*(c + d*x)^n*Log[F])])/(d*n*(-(
b*(c + d*x)^n*Log[F]))^n^(-1)))
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int F^{a+b(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n),x)
```

```
[Out] int(F^(a+b*(d*x+c)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^n*b + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(F^{(dx+c)^n b+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] integral(F^((d*x + c)^n*b + a), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^n*b + a), x)
```

3.364 $\int \frac{F^{a+b(c+dx)^n}}{c+dx} \, dx$

Optimal. Leaf size=22

$$\frac{F^a \text{ExpIntegralEi}\left(b \log(F)(c+dx)^n\right)}{dn}$$

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^n*Log[F]])/(d*n)
```

Rubi [A] time = 0.0565938, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a \text{ExpIntegralEi}\left(b \log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)/(c + d*x),x]
```

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^n*Log[F]])/(d*n)
```

Rubi in Sympy [A] time = 4.98408, size = 19, normalized size = 0.86

$$\frac{F^a \operatorname{Ei}\left(b\left(c+dx\right)^n \log\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)/(d*x+c),x)
```

```
[Out] F**a*Ei(b*(c + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.0104206, size = 22, normalized size = 1.

$$\frac{F^a \text{ExpIntegralEi}\left(b \log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)/(c + d*x),x]
```

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^n*Log[F]])/(d*n)
```

Maple [A] time = 0.056, size = 26, normalized size = 1.2

$$-\frac{F^a Ei\left(1,-b\left(dx+c\right)^n \ln\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)/(d*x+c),x)
```

```
[Out] -1/d/n*F^a*Ei(1,-b*(d*x+c)^n*ln(F))
```

Maxima [A] time = 0.876481, size = 30, normalized size = 1.36

$$\frac{F^a \mathrm{Ei}\left((dx+c)^n b \log(F)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + c)^n*b + a)/(d*x + c),x, algorithm="maxima")
```

```
[Out] F^a*Ei((d*x + c)^n*b*log(F))/(d*n)
```

Fricas [A] time = 0.279706, size = 30, normalized size = 1.36

$$\frac{F^a \mathrm{Ei}\left((dx+c)^n b \log(F)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + c)^n*b + a)/(d*x + c),x, algorithm="fricas")
```

```
[Out] F^a*Ei((d*x + c)^n*b*log(F))/(d*n)
```

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

$$\int \frac{F^{a+b(c+dx)^n}}{c+dx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F**(a+b*(d*x+c)**n)/(d*x+c),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**n)/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{dx+c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^((d*x + c)^n*b + a)/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c), x)
```

3.365 $\int \frac{F^{a+b(c+dx)^n}}{(c+dx)^2} dx$

Optimal. Leaf size=52

$$-\frac{F^a(-b\log(F)(c+dx)^n)^{\frac{1}{n}}\operatorname{Gamma}\left(-\frac{1}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)}$$

```
[Out] -((F^a*Gamma[-n^(-1), -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*L
og[F]))^n^(-1))/(d*n*(c + d*x)))
```

Rubi [A] time = 0.0600595, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a(-b\log(F)(c+dx)^n)^{\frac{1}{n}}\operatorname{Gamma}\left(-\frac{1}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)/(c + d*x)^2,x]
```

```
[Out] -((F^a*Gamma[-n^(-1), -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*L
og[F]))^n^(-1))/(d*n*(c + d*x)))
```

Rubi in Sympy [A] time = 5.86974, size = 48, normalized size = 0.92

$$-\frac{F^a(-b(c+dx)^n\log(F))^{\frac{1}{n}}\left(-\frac{1}{n},-b(c+dx)^n\log(F)\right)}{dn(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)/(d*x+c)**2,x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(1/n)*Gamma(-1/n, -b*(c + d*x)**n
*log(F))/(d*n*(c + d*x))
```

Mathematica [A] time = 0.0298042, size = 52, normalized size = 1.

$$-\frac{F^a(-b\log(F)(c+dx)^n)^{\frac{1}{n}}\operatorname{Gamma}\left(-\frac{1}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)/(c + d*x)^2,x]
```

```
[Out] -((F^a*Gamma[-n^(-1), -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*L
og[F]))^n^(-1))/(d*n*(c + d*x)))
```

Maple [F] time = 0.084, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^n}}{(dx+c)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)/(d*x+c)^2,x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)/(d*x+c)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{(dx+c)^n b+a}}{d^2x^2 + 2\,cdx + c^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] integral(F^((d*x + c)^n*b + a)/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)/(d*x+c)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c)^2, x)
```

3.366 $\int \frac{F^{a+b(c+dx)^n}}{(c+dx)^3}\,dx$

Optimal. Leaf size=54

$$-\frac{F^a\left(-b\log(F)(c+dx)^n\right)^{2/n}\text{Gamma}\left(-\frac{2}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)^2}$$

```
[Out] -((F^a*Gamma[-2/n, -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*Log[
F]))^(2/n))/(d*n*(c + d*x)^2))
```

Rubi [A] time = 0.0603146, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\left(-b\log(F)(c+dx)^n\right)^{2/n}\text{Gamma}\left(-\frac{2}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)/(c + d*x)^3,x]
```

```
[Out] -((F^a*Gamma[-2/n, -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*Log[
F]))^(2/n))/(d*n*(c + d*x)^2))
```

Rubi in Sympy [A] time = 6.1897, size = 49, normalized size = 0.91

$$-\frac{F^a\left(-b\left(c+dx\right)^n\log\left(F\right)\right)^{\frac{2}{n}}\left(-\frac{2}{n},-b\left(c+dx\right)^n\log\left(F\right)\right)}{dn\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)/(d*x+c)**3,x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(2/n)*Gamma(-2/n, -b*(c + d*x)**n
*log(F))/(d*n*(c + d*x)**2)
```

Mathematica [A] time = 0.0293063, size = 54, normalized size = 1.

$$-\frac{F^a\left(-b\log(F)(c+dx)^n\right)^{2/n}\text{Gamma}\left(-\frac{2}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)/(c + d*x)^3,x]
```

```
[Out] -((F^a*Gamma[-2/n, -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*Log[
F]))^(2/n))/(d*n*(c + d*x)^2))
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^n}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)/(d*x+c)^3,x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)/(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{(dx+c)^n b+a}}{d^3x^3 + 3\,cd^2x^2 + 3\,c^2dx + c^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] integral(F^((d*x + c)^n*b + a)/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x
 + c^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)/(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c)^3, x)
```

3.367 $\int \frac{F^{a+b(c+dx)^n}}{(c+dx)^4}\,dx$

Optimal. Leaf size=54

$$-\frac{F^a\left(-b\log(F)(c+dx)^n\right)^{3/n}\text{Gamma}\left(-\frac{3}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)^3}$$

```
[Out] -((F^a*Gamma[-3/n, -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*Log[
F]))^(3/n))/(d*n*(c + d*x)^3))
```

Rubi [A] time = 0.0602582, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{F^a\left(-b\log(F)(c+dx)^n\right)^{3/n}\text{Gamma}\left(-\frac{3}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)/(c + d*x)^4,x]
```

```
[Out] -((F^a*Gamma[-3/n, -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*Log[
F]))^(3/n))/(d*n*(c + d*x)^3))
```

Rubi in Sympy [A] time = 6.15284, size = 49, normalized size = 0.91

$$-\frac{F^a\left(-b\left(c+dx\right)^n\log\left(F\right)\right)^{\frac{3}{n}}\left(-\frac{3}{n},-b\left(c+dx\right)^n\log\left(F\right)\right)}{dn\left(c+dx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)/(d*x+c)**4,x)
```

```
[Out] -F**a*(-b*(c + d*x)**n*log(F))**(3/n)*Gamma(-3/n, -b*(c + d*x)**n
*log(F))/(d*n*(c + d*x)**3)
```

Mathematica [A] time = 0.0289898, size = 54, normalized size = 1.

$$-\frac{F^a\left(-b\log(F)(c+dx)^n\right)^{3/n}\text{Gamma}\left(-\frac{3}{n},-b\log(F)(c+dx)^n\right)}{dn(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)/(c + d*x)^4,x]
```

```
[Out] -((F^a*Gamma[-3/n, -(b*(c + d*x)^n*Log[F])]*(-(b*(c + d*x)^n*Log[
F]))^(3/n))/(d*n*(c + d*x)^3))
```

Maple [F] time = 0.034, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^n}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)/(d*x+c)^4,x)
```

```
[Out] int(F^(a+b*(d*x+c)^n)/(d*x+c)^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^4,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c)^4, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{(dx+c)^n b+a}}{d^4x^4 + 4\,cd^3x^3 + 6\,c^2d^2x^2 + 4\,c^3dx + c^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^4,x, algorithm="fricas")
```

```
[Out] integral(F^((d*x + c)^n*b + a)/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2
*x^2 + 4*c^3*d*x + c^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)/(d*x+c)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{(dx+c)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c)^4,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c)^4, x)
```

3.368 $\int F^{a+b(c+dx)^n}(c+dx)^{-1+6n}\,dx$

Optimal. Leaf size=32

$$-\frac{F^a\text{Gamma}\left(6,-b\log(F)(c+dx)^n\right)}{b^6dn\log^6(F)}$$

```
[Out] -((F^a*Gamma[6, -(b*(c + d*x)^n*Log[F])])/(b^6*d*n*Log[F]^6))
```

Rubi [A] time = 0.0643527, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.04$

$$-\frac{F^a\text{Gamma}\left(6,-b\log(F)(c+dx)^n\right)}{b^6dn\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 6*n),x]
```

```
[Out] -((F^a*Gamma[6, -(b*(c + d*x)^n*Log[F])])/(b^6*d*n*Log[F]^6))
```

Rubi in Sympy [A] time = 6.49455, size = 31, normalized size = 0.97

$$-\frac{F^a(6,-b\left(c+dx\right)^n\log\left(F\right))}{b^6dn\log\left(F\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+6*n),x)
```

```
[Out] -F**a*Gamma(6, -b*(c + d*x)**n*log(F))/(b**6*d*n*log(F)**6)
```

Mathematica [B] time = 0.0554527, size = 112, normalized size = 3.5

$$\frac{F^{a+b(c+dx)^n}\left(b^5\log^5(F)(c+dx)^{5n}-5b^4\log^4(F)(c+dx)^{4n}+20b^3\log^3(F)(c+dx)^{3n}-60b^2\log^2(F)(c+dx)^{2n}+120b\log(F)(c\cdot\right.}{b^6dn\log^6(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 6*n),x]
```

```
[Out] (F^(a + b*(c + d*x)^n)*(-120 + 120*b*(c + d*x)^n*Log[F] - 60*b^2*
(c + d*x)^(2*n)*Log[F]^2 + 20*b^3*(c + d*x)^(3*n)*Log[F]^3 - 5*b^
4*(c + d*x)^(4*n)*Log[F]^4 + b^5*(c + d*x)^(5*n)*Log[F]^5))/(b^6*
d*n*Log[F]^6)
```

Maple [A] time = 0.033, size = 113, normalized size = 3.5

$$\frac{\left(b^5\left((dx+c)^n\right)^5(\ln(F))^5-5\,b^4\left((dx+c)^n\right)^4(\ln(F))^4+20\,b^3\left((dx+c)^n\right)^3(\ln(F))^3-60\,b^2\left((dx+c)^n\right)^2(\ln(F))^2+120\,b\,(dx+c)\right.}{b^6\,(\ln(F))^6\,nd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1+6*n),x)
```

```
[Out] (b^5*((d*x+c)^n)^5*ln(F)^5-5*b^4*((d*x+c)^n)^4*ln(F)^4+20*b^3*((d
*x+c)^n)^3*ln(F)^3-60*b^2*((d*x+c)^n)^2*ln(F)^2+120*b*(d*x+c)^n*l
n(F)-120)/b^6/ln(F)^6/n/d*F^(a+b*(d*x+c)^n)
```

Maxima [A] time = 0.806605, size = 174, normalized size = 5.44

$$\frac{\left((dx+c)^{5\,n} F^a b^5 \log(F)^5 - 5\,(dx+c)^{4\,n} F^a b^4 \log(F)^4 + 20\,(dx+c)^{3\,n} F^a b^3 \log(F)^3 - 60\,(dx+c)^{2\,n} F^a b^2 \log(F)^2 + 120\,(dx+c\right.}{b^6 dn \log(F)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(6*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] ((d*x + c)^(5*n)*F^a*b^5*log(F)^5 - 5*(d*x + c)^(4*n)*F^a*b^4*log
(F)^4 + 20*(d*x + c)^(3*n)*F^a*b^3*log(F)^3 - 60*(d*x + c)^(2*n)*
F^a*b^2*log(F)^2 + 120*(d*x + c)^n*F^a*b*log(F) - 120*F^a)*F^((d*
x + c)^n*b)/(b^6*d*n*log(F)^6)
```

Fricas [A] time = 0.276992, size = 157, normalized size = 4.91

$$\frac{\left((dx+c)^{5\,n} b^5 \log(F)^5 - 5\,(dx+c)^{4\,n} b^4 \log(F)^4 + 20\,(dx+c)^{3\,n} b^3 \log(F)^3 - 60\,(dx+c)^{2\,n} b^2 \log(F)^2 + 120\,(dx+c)^n b \log(F)\right.}{b^6 dn \log(F)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(6*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] ((d*x + c)^(5*n)*b^5*log(F)^5 - 5*(d*x + c)^(4*n)*b^4*log(F)^4 +
20*(d*x + c)^(3*n)*b^3*log(F)^3 - 60*(d*x + c)^(2*n)*b^2*log(F)^2
 + 120*(d*x + c)^n*b*log(F) - 120)*e^((d*x + c)^n*b*log(F) + a*lo
g(F))/(b^6*d*n*log(F)^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+6*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{6\,n-1} F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(6*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(6*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.369 $\int F^{a+b(c+dx)^n}(c+dx)^{-1+5n}\,dx$

Optimal. Leaf size=31

$$\frac{F^a\text{Gamma}\left(5,-b\log(F)(c+dx)^n\right)}{b^5dn\log^5(F)}$$

```
[Out] (F^a*Gamma[5, -(b*(c + d*x)^n*Log[F])])/(b^5*d*n*Log[F]^5)
```

Rubi [A] time = 0.0639668, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.04

$$\frac{F^a\text{Gamma}\left(5,-b\log(F)(c+dx)^n\right)}{b^5dn\log^5(F)}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 5*n),x]
```

```
[Out] (F^a*Gamma[5, -(b*(c + d*x)^n*Log[F])])/(b^5*d*n*Log[F]^5)
```

Rubi in Sympy [A] time = 6.32169, size = 29, normalized size = 0.94

$$\frac{F^a(5,-b\,(c+dx)^n\log\,(F))}{b^5dn\log\,(F)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+5*n),x)
```

```
[Out] F**a*Gamma(5, -b*(c + d*x)**n*log(F))/(b**5*d*n*log(F)**5)
```

Mathematica [B] time = 0.0475101, size = 94, normalized size = 3.03

$$\frac{F^{a+b(c+dx)^n}\left(b^4\log^4(F)(c+dx)^{4n}-4b^3\log^3(F)(c+dx)^{3n}+12b^2\log^2(F)(c+dx)^{2n}-24b\log(F)(c+dx)^n+24\right)}{b^5dn\log^5(F)}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 5*n),x]
```

```
[Out] (F^(a + b*(c + d*x)^n)*(24 - 24*b*(c + d*x)^n*Log[F] + 12*b^2*(c
+ d*x)^(2*n)*Log[F]^2 - 4*b^3*(c + d*x)^(3*n)*Log[F]^3 + b^4*(c +
 d*x)^(4*n)*Log[F]^4))/(b^5*d*n*Log[F]^5)
```

Maple [A] time = 0.033, size = 95, normalized size = 3.1

$$\frac{\left(b^4\left((dx+c)^n\right)^4(\ln(F))^4-4\,b^3\left((dx+c)^n\right)^3(\ln(F))^3+12\,b^2\left((dx+c)^n\right)^2(\ln(F))^2-24\,b\,(dx+c)^n\ln(F)+24\right)F^{a+b(dx+c)^n}}{(\ln(F))^5\,b^5nd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1+5*n),x)
```

```
[Out] (b^4*((d*x+c)^n)^4*ln(F)^4-4*b^3*((d*x+c)^n)^3*ln(F)^3+12*b^2*((d
*x+c)^n)^2*ln(F)^2-24*b*(d*x+c)^n*ln(F)+24)/b^5/ln(F)^5/n/d*F^(a+
b*(d*x+c)^n)
```

Maxima [A] time = 0.7999, size = 146, normalized size = 4.71

$$\frac{\left((dx+c)^{4\,n}F^{a}b^{4}\log\left(F\right)^{4}-4\,(dx+c)^{3\,n}F^{a}b^{3}\log\left(F\right)^{3}+12\,(dx+c)^{2\,n}F^{a}b^{2}\log\left(F\right)^{2}-24\,(dx+c)^{n}F^{a}b\log\left(F\right)+24\,F^{a}\right)F^{(dx+c)^{n}b}}{b^{5}dn\log\left(F\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(5*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] ((d*x + c)^(4*n)*F^a*b^4*log(F)^4 - 4*(d*x + c)^(3*n)*F^a*b^3*log
(F)^3 + 12*(d*x + c)^(2*n)*F^a*b^2*log(F)^2 - 24*(d*x + c)^n*F^a*
b*log(F) + 24*F^a)*F^((d*x + c)^n*b)/(b^5*d*n*log(F)^5)
```

Fricas [A] time = 0.26053, size = 132, normalized size = 4.26

$$\frac{\left((dx+c)^{4\,n}b^{4}\log\left(F\right)^{4}-4\,(dx+c)^{3\,n}b^{3}\log\left(F\right)^{3}+12\,(dx+c)^{2\,n}b^{2}\log\left(F\right)^{2}-24\,(dx+c)^{n}b\log\left(F\right)+24\right)e^{\left((dx+c)^{n}b\log\left(F\right)+a\log\left(F\right)\right)}}{b^{5}dn\log\left(F\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(5*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] ((d*x + c)^(4*n)*b^4*log(F)^4 - 4*(d*x + c)^(3*n)*b^3*log(F)^3 +
12*(d*x + c)^(2*n)*b^2*log(F)^2 - 24*(d*x + c)^n*b*log(F) + 24)*e
^((d*x + c)^n*b*log(F) + a*log(F))/(b^5*d*n*log(F)^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+5*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{5\,n-1}F^{(dx+c)^{n}b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(5*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.370 $\int F^{a+b(c+dx)^n}(c+dx)^{-1+4n}\,dx$

Optimal. Leaf size=137

$$-\frac{6F^{a+b(c+dx)^n}}{b^4dn\log^4(F)}+\frac{6(c+dx)^nF^{a+b(c+dx)^n}}{b^3dn\log^3(F)}-\frac{3(c+dx)^{2n}F^{a+b(c+dx)^n}}{b^2dn\log^2(F)}+\frac{(c+dx)^{3n}F^{a+b(c+dx)^n}}{bdn\log(F)}$$

```
[Out] (-6*F^(a + b*(c + d*x)^n))/(b^4*d*n*Log[F]^4) + (6*F^(a + b*(c +
d*x)^n)*(c + d*x)^n)/(b^3*d*n*Log[F]^3) - (3*F^(a + b*(c + d*x)^n
)*(c + d*x)^(2*n))/(b^2*d*n*Log[F]^2) + (F^(a + b*(c + d*x)^n)*(c
 + d*x)^(3*n))/(b*d*n*Log[F])
```

Rubi [A] time = 0.275187, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$-\frac{6F^{a+b(c+dx)^n}}{b^4dn\log^4(F)}+\frac{6(c+dx)^nF^{a+b(c+dx)^n}}{b^3dn\log^3(F)}-\frac{3(c+dx)^{2n}F^{a+b(c+dx)^n}}{b^2dn\log^2(F)}+\frac{(c+dx)^{3n}F^{a+b(c+dx)^n}}{bdn\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 4*n),x]
```

```
[Out] (-6*F^(a + b*(c + d*x)^n))/(b^4*d*n*Log[F]^4) + (6*F^(a + b*(c +
d*x)^n)*(c + d*x)^n)/(b^3*d*n*Log[F]^3) - (3*F^(a + b*(c + d*x)^n
)*(c + d*x)^(2*n))/(b^2*d*n*Log[F]^2) + (F^(a + b*(c + d*x)^n)*(c
 + d*x)^(3*n))/(b*d*n*Log[F])
```

Rubi in Sympy [A] time = 31.3122, size = 119, normalized size = 0.87

$$\frac{F^{a+b(c+dx)^n}(c+dx)^{3n}}{bdn\log(F)}-\frac{3F^{a+b(c+dx)^n}(c+dx)^{2n}}{b^2dn\log(F)^2}+\frac{6F^{a+b(c+dx)^n}(c+dx)^n}{b^3dn\log(F)^3}-\frac{6F^{a+b(c+dx)^n}}{b^4dn\log(F)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+4*n),x)
```

```
[Out] F**(a + b*(c + d*x)**n)*(c + d*x)**(3*n)/(b*d*n*log(F)) - 3*F**(a
 + b*(c + d*x)**n)*(c + d*x)**(2*n)/(b**2*d*n*log(F)**2) + 6*F**(
a + b*(c + d*x)**n)*(c + d*x)**n/(b**3*d*n*log(F)**3) - 6*F**(a +
 b*(c + d*x)**n)/(b**4*d*n*log(F)**4)
```

Mathematica [A] time = 0.0422035, size = 76, normalized size = 0.55

$$\frac{F^{a+b(c+dx)^n}\left(b^3\log^3(F)(c+dx)^{3n}-3b^2\log^2(F)(c+dx)^{2n}+6b\log(F)(c+dx)^n-6\right)}{b^4dn\log^4(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 4*n),x]
```

```
[Out] (F^(a + b*(c + d*x)^n)*(-6 + 6*b*(c + d*x)^n*Log[F] - 3*b^2*(c +
d*x)^(2*n)*Log[F]^2 + b^3*(c + d*x)^(3*n)*Log[F]^3))/(b^4*d*n*Log
[F]^4)
```

Maple [A] time = 0.032, size = 77, normalized size = 0.6

$$\frac{\left(b^{3}\left(\left(dx+c\right)^{n}\right)^{3}\left(\ln\left(F\right)\right)^{3}-3\,b^{2}\left(\left(dx+c\right)^{n}\right)^{2}\left(\ln\left(F\right)\right)^{2}+6\,b\left(dx+c\right)^{n}\ln\left(F\right)-6\right)F^{a+b\left(dx+c\right)^{n}}}{\left(\ln\left(F\right)\right)^{4}b^{4}nd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1+4*n),x)
```

```
[Out] (b^3*((d*x+c)^n)^3*ln(F)^3-3*b^2*((d*x+c)^n)^2*ln(F)^2+6*b*(d*x+c
)^n*ln(F)-6)/b^4/ln(F)^4/n/d*F^(a+b*(d*x+c)^n)
```

Maxima [A] time = 0.793621, size = 117, normalized size = 0.85

$$\frac{\left(\left(dx+c\right)^{3\,n}F^{a}b^{3}\log\left(F\right)^{3}-3\left(dx+c\right)^{2\,n}F^{a}b^{2}\log\left(F\right)^{2}+6\left(dx+c\right)^{n}F^{a}b\log\left(F\right)-6\,F^{a}\right)F^{\left(dx+c\right)^{n}b}}{b^{4}dn\log\left(F\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(4*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] ((d*x + c)^(3*n)*F^a*b^3*log(F)^3 - 3*(d*x + c)^(2*n)*F^a*b^2*log
(F)^2 + 6*(d*x + c)^n*F^a*b*log(F) - 6*F^a)*F^((d*x + c)^n*b)/(b^
4*d*n*log(F)^4)
```

Fricas [A] time = 0.271573, size = 108, normalized size = 0.79

$$\frac{\left(\left(dx+c\right)^{3\,n}b^{3}\log\left(F\right)^{3}-3\left(dx+c\right)^{2\,n}b^{2}\log\left(F\right)^{2}+6\left(dx+c\right)^{n}b\log\left(F\right)-6\right)e^{\left(\left(dx+c\right)^{n}b\log\left(F\right)+a\log\left(F\right)\right)}}{b^{4}dn\log\left(F\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(4*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] ((d*x + c)^(3*n)*b^3*log(F)^3 - 3*(d*x + c)^(2*n)*b^2*log(F)^2 +
6*(d*x + c)^n*b*log(F) - 6)*e^((d*x + c)^n*b*log(F) + a*log(F))/(
b^4*d*n*log(F)^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+4*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\left(dx+c\right)^{4\,n-1}F^{\left(dx+c\right)^{n}b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(4*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(4*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.371 $\int F^{a+b(c+dx)^n}(c+dx)^{-1+3n}\,dx$

Optimal. Leaf size=100

$$\frac{2F^{a+b(c+dx)^n}}{b^3dn\log^3(F)}-\frac{2(c+dx)^nF^{a+b(c+dx)^n}}{b^2dn\log^2(F)}+\frac{(c+dx)^{2n}F^{a+b(c+dx)^n}}{bdn\log(F)}$$

```
[Out] (2*F^(a + b*(c + d*x)^n))/(b^3*d*n*Log[F]^3) - (2*F^(a + b*(c + d
*x)^n)*(c + d*x)^n)/(b^2*d*n*Log[F]^2) + (F^(a + b*(c + d*x)^n)*(
c + d*x)^(2*n))/(b*d*n*Log[F])
```

Rubi [A] time = 0.193298, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{2F^{a+b(c+dx)^n}}{b^3dn\log^3(F)}-\frac{2(c+dx)^nF^{a+b(c+dx)^n}}{b^2dn\log^2(F)}+\frac{(c+dx)^{2n}F^{a+b(c+dx)^n}}{bdn\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 3*n),x]
```

```
[Out] (2*F^(a + b*(c + d*x)^n))/(b^3*d*n*Log[F]^3) - (2*F^(a + b*(c + d
*x)^n)*(c + d*x)^n)/(b^2*d*n*Log[F]^2) + (F^(a + b*(c + d*x)^n)*(
c + d*x)^(2*n))/(b*d*n*Log[F])
```

Rubi in Sympy [A] time = 21.1308, size = 85, normalized size = 0.85

$$\frac{F^{a+b(c+dx)^n}(c+dx)^{2n}}{bdn\log(F)}-\frac{2F^{a+b(c+dx)^n}(c+dx)^n}{b^2dn\log(F)^2}+\frac{2F^{a+b(c+dx)^n}}{b^3dn\log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+3*n),x)
```

```
[Out] F**(a + b*(c + d*x)**n)*(c + d*x)**(2*n)/(b*d*n*log(F)) - 2*F**(a
 + b*(c + d*x)**n)*(c + d*x)**n/(b**2*d*n*log(F)**2) + 2*F**(a +
b*(c + d*x)**n)/(b**3*d*n*log(F)**3)
```

Mathematica [A] time = 0.0369987, size = 58, normalized size = 0.58

$$\frac{F^{a+b(c+dx)^n}\left(b^2\log^2(F)(c+dx)^{2n}-2b\log(F)(c+dx)^n+2\right)}{b^3dn\log^3(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 3*n),x]
```

```
[Out] (F^(a + b*(c + d*x)^n)*(2 - 2*b*(c + d*x)^n*Log[F] + b^2*(c + d*x
)^(2*n)*Log[F]^2))/(b^3*d*n*Log[F]^3)
```

Maple [A] time = 0.03, size = 59, normalized size = 0.6

$$\frac{\left(b^2\left((dx+c)^n\right)^2(\ln(F))^2-2b(dx+c)^n\ln(F)+2\right)F^{a+b(dx+c)^n}}{(\ln(F))^3b^3nd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1+3*n),x)
```

```
[Out] (b^2*((d*x+c)^n)^2*ln(F)^2-2*b*(d*x+c)^n*ln(F)+2)/b^3/ln(F)^3/n/d
*F^(a+b*(d*x+c)^n)
```

Maxima [A] time = 0.827726, size = 89, normalized size = 0.89

$$\frac{\left((dx+c)^{2n}F^a b^2 \log(F)^2 - 2\,(dx+c)^n F^a b \log(F) + 2\,F^a\right) F^{(dx+c)^n b}}{b^3 dn \log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(3*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] ((d*x + c)^(2*n)*F^a*b^2*log(F)^2 - 2*(d*x + c)^n*F^a*b*log(F) +
2*F^a)*F^((d*x + c)^n*b)/(b^3*d*n*log(F)^3)
```

Fricas [A] time = 0.259203, size = 84, normalized size = 0.84

$$\frac{\left((dx+c)^{2n}b^2 \log(F)^2 - 2\,(dx+c)^n b \log(F) + 2\right) e^{\left((dx+c)^n b \log(F) + a \log(F)\right)}}{b^3 dn \log(F)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(3*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] ((d*x + c)^(2*n)*b^2*log(F)^2 - 2*(d*x + c)^n*b*log(F) + 2)*e^((d
*x + c)^n*b*log(F) + a*log(F))/(b^3*d*n*log(F)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+3*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{3n-1} F^{(dx+c)^n b + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(3*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(3*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.372 $\int F^{a+b(c+dx)^n}(c+dx)^{-1+2n}\,dx$

Optimal. Leaf size=63

$$\frac{(c+dx)^n F^{a+b(c+dx)^n}}{bdn\log(F)}-\frac{F^{a+b(c+dx)^n}}{b^2dn\log^2(F)}$$

```
[Out] -(F^(a + b*(c + d*x)^n)/(b^2*d*n*Log[F]^2)) + (F^(a + b*(c + d*x)
^n)*(c + d*x)^n)/(b*d*n*Log[F])
```

Rubi [A] time = 0.123547, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{(c+dx)^n F^{a+b(c+dx)^n}}{bdn\log(F)}-\frac{F^{a+b(c+dx)^n}}{b^2dn\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 2*n),x]
```

```
[Out] -(F^(a + b*(c + d*x)^n)/(b^2*d*n*Log[F]^2)) + (F^(a + b*(c + d*x)
^n)*(c + d*x)^n)/(b*d*n*Log[F])
```

Rubi in Sympy [A] time = 12.1757, size = 49, normalized size = 0.78

$$\frac{F^{a+b(c+dx)^n}(c+dx)^n}{bdn\log(F)}-\frac{F^{a+b(c+dx)^n}}{b^2dn\log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+2*n),x)
```

```
[Out] F**(a + b*(c + d*x)**n)*(c + d*x)**n/(b*d*n*log(F)) - F**(a + b*(
c + d*x)**n)/(b**2*d*n*log(F)**2)
```

Mathematica [A] time = 0.0321849, size = 40, normalized size = 0.63

$$\frac{F^{a+b(c+dx)^n}\left(b\log(F)(c+dx)^n-1\right)}{b^2dn\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + 2*n),x]
```

```
[Out] (F^(a + b*(c + d*x)^n)*(-1 + b*(c + d*x)^n*Log[F]))/(b^2*d*n*Log[
F]^2)
```

Maple [A] time = 0.083, size = 74, normalized size = 1.2

$$\frac{e^{n\ln(dx+c)}e^{\left(a+be^{n\ln(dx+c)}\right)\ln(F)}}{\ln(F)\,bdn}-\frac{e^{\left(a+be^{n\ln(dx+c)}\right)\ln(F)}}{(\ln(F))^2\,b^2dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1+2*n),x)
```

```
[Out] 1/d/b/n/ln(F)*exp(n*ln(d*x+c))*exp((a+b*exp(n*ln(d*x+c)))*ln(F))-
1/b^2/n/d/ln(F)^2*exp((a+b*exp(n*ln(d*x+c)))*ln(F))
```

Maxima [A] time = 0.82243, size = 61, normalized size = 0.97

$$\frac{((dx+c)^n F^a b \log(F) - F^a) F^{(dx+c)^n b}}{b^2 dn \log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(2*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] ((d*x + c)^n*F^a*b*log(F) - F^a)*F^((d*x + c)^n*b)/(b^2*d*n*log(F
)^2)
```

Fricas [A] time = 0.248145, size = 59, normalized size = 0.94

$$\frac{((dx+c)^n b \log(F) - 1) e^{((dx+c)^n b \log(F) + a \log(F))}}{b^2 dn \log(F)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(2*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

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

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{2n-1} F^{(dx+c)^n b + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(2*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(2*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.373 $\int F^{a+b(c+dx)^n}(c+dx)^{-1+n}\,dx$

Optimal. Leaf size=27

$$\frac{F^{a+b(c+dx)^n}}{bdn\log(F)}$$

```
[Out] F^(a + b*(c + d*x)^n)/(b*d*n*Log[F])
```

Rubi [A] time = 0.0566703, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043

$$\frac{F^{a+b(c+dx)^n}}{bdn\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + n),x]
```

```
[Out] F^(a + b*(c + d*x)^n)/(b*d*n*Log[F])
```

Rubi in Sympy [A] time = 5.71762, size = 19, normalized size = 0.7

$$\frac{F^{a+b(c+dx)^n}}{bdn\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+n),x)
```

```
[Out] F**(a + b*(c + d*x)**n)/(b*d*n*log(F))
```

Mathematica [A] time = 0.009779, size = 27, normalized size = 1.

$$\frac{F^{a+b(c+dx)^n}}{bdn\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 + n),x]
```

```
[Out] F^(a + b*(c + d*x)^n)/(b*d*n*Log[F])
```

Maple [A] time = 0.051, size = 32, normalized size = 1.2

$$\frac{e^{\left(a+b e^{n\ln(dx+c)}\right)\ln(F)}}{\ln(F)\,bdn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1+n),x)
```

```
[Out] 1/d/b/n/ln(F)*exp((a+b*exp(n*ln(d*x+c)))*ln(F))
```

Maxima [A] time = 0.776604, size = 36, normalized size = 1.33

$$\frac{F^{(dx+c)^n b+a}}{bdn \log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] F^((d*x + c)^n*b + a)/(b*d*n*log(F))
```

Fricas [A] time = 0.258469, size = 42, normalized size = 1.56

$$\frac{e^{((dx+c)^n b \log(F)+a \log(F))}}{bdn \log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] e^((d*x + c)^n*b*log(F) + a*log(F))/(b*d*n*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1+n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.230019, size = 36, normalized size = 1.33

$$\frac{F^{(dx+c)^n b+a}}{bdn \ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] F^((d*x + c)^n*b + a)/(b*d*n*ln(F))
```

3.374 $\int \frac{F^{a+b(c+dx)^n}}{c+dx}\,dx$

Optimal. Leaf size=22

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^n*Log[F]])/(d*n)
```

Rubi [A] time = 0.0561954, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)/(c + d*x),x]
```

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^n*Log[F]])/(d*n)
```

Rubi in Sympy [A] time = 5.22845, size = 19, normalized size = 0.86

$$\frac{F^a\operatorname{Ei}\left(b\left(c+dx\right)^n\log\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)/(d*x+c),x)
```

```
[Out] F**a*Ei(b*(c + d*x)**n*log(F))/(d*n)
```

Mathematica [A] time = 0.00871826, size = 22, normalized size = 1.

$$\frac{F^a\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)/(c + d*x),x]
```

```
[Out] (F^a*ExpIntegralEi[b*(c + d*x)^n*Log[F]])/(d*n)
```

Maple [A] time = 0., size = 26, normalized size = 1.2

$$-\frac{F^a Ei\left(1,-b\left(dx+c\right)^n\ln\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)/(d*x+c),x)
```

```
[Out] -1/d/n*F^a*Ei(1,-b*(d*x+c)^n*ln(F))
```

Maxima [A] time = 0.855227, size = 30, normalized size = 1.36

$$\frac{F^a \mathrm{Ei}\left((dx+c)^n b \log(F)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c),x, algorithm="maxima")
```

```
[Out] F^a*Ei((d*x + c)^n*b*log(F))/(d*n)
```

Fricas [A] time = 0.261841, size = 30, normalized size = 1.36

$$\frac{F^a \mathrm{Ei}\left((dx+c)^n b \log(F)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c),x, algorithm="fricas")
```

```
[Out] F^a*Ei((d*x + c)^n*b*log(F))/(d*n)
```

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

$$\int \frac{F^{a+b(c+dx)^n}}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)/(d*x+c),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**n)/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^n b+a}}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^n*b + a)/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^n*b + a)/(d*x + c), x)
```

3.375 $\int F^{a+b(c+dx)^n}(c+dx)^{-1-n}\,dx$

Optimal. Leaf size=56

$$\frac{bF^a\log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{dn}-\frac{(c+dx)^{-n}F^{a+b(c+dx)^n}}{dn}$$

```
[Out] -(F^(a + b*(c + d*x)^n)/(d*n*(c + d*x)^n)) + (b*F^a*ExpIntegralEi
[b*(c + d*x)^n*Log[F]]*Log[F])/(d*n)
```

Rubi [A] time = 0.119054, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{bF^a\log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{dn}-\frac{(c+dx)^{-n}F^{a+b(c+dx)^n}}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - n),x]
```

```
[Out] -(F^(a + b*(c + d*x)^n)/(d*n*(c + d*x)^n)) + (b*F^a*ExpIntegralEi
[b*(c + d*x)^n*Log[F]]*Log[F])/(d*n)
```

Rubi in Sympy [A] time = 10.2107, size = 46, normalized size = 0.82

$$\frac{F^a b\log\left(F\right)\text{Ei}\left(b\left(c+dx\right)^n\log\left(F\right)\right)}{dn}-\frac{F^{a+b(c+dx)^n}\left(c+dx\right)^{-n}}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-n),x)
```

```
[Out] F**a*b*log(F)*Ei(b*(c + d*x)**n*log(F))/(d*n) - F**(a + b*(c + d*
x)**n)*(c + d*x)**(-n)/(d*n)
```

Mathematica [A] time = 0.0639915, size = 50, normalized size = 0.89

$$-\frac{F^a\left((c+dx)^{-n}F^{b(c+dx)^n}-b\log(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - n),x]
```

```
[Out] -((F^a*(F^(b*(c + d*x)^n)/(c + d*x)^n - b*ExpIntegralEi[b*(c + d*
x)^n*Log[F]]*Log[F]))/(d*n))
```

Maple [A] time = 0.069, size = 60, normalized size = 1.1

$$-\frac{F^{a+b(dx+c)^n}}{dn\left(dx+c\right)^n}-\frac{b\ln\left(F\right)F^a Ei\left(1,-b\left(dx+c\right)^n\ln\left(F\right)\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1-n),x)
```

```
[Out] -F^(a+b*(d*x+c)^n)/d/n/((d*x+c)^n)-1/d/n*b*ln(F)*F^a*Ei(1,-b*(d*x
+c)^n*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-n-1} F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(-n - 1)*F^((d*x + c)^n*b + a), x)
```

Fricas [A] time = 0.253784, size = 84, normalized size = 1.5

$$\frac{(dx+c)^n F^a b \mathrm{Ei}\left((dx+c)^n b \log(F)\right) \log(F) - e^{\left((dx+c)^n b \log(F) + a \log(F)\right)}}{(dx+c)^n dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] ((d*x + c)^n*F^a*b*Ei((d*x + c)^n*b*log(F))*log(F) - e^((d*x + c)
^n*b*log(F) + a*log(F)))/((d*x + c)^n*d*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-n-1} F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(-n - 1)*F^((d*x + c)^n*b + a), x)
```

3.376 $\int F^{a+b(c+dx)^n}(c+dx)^{-1-2n}\,dx$

Optimal. Leaf size=100

$$\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{2dn}-\frac{(c+dx)^{-2n}F^{a+b(c+dx)^n}}{2dn}-\frac{b\log(F)(c+dx)^{-n}F^{a+b(c+dx)^n}}{2dn}$$

```
[Out] -F^(a + b*(c + d*x)^n)/(2*d*n*(c + d*x)^(2*n)) - (b*F^(a + b*(c +
 d*x)^n)*Log[F])/(2*d*n*(c + d*x)^n) + (b^2*F^a*ExpIntegralEi[b*(
c + d*x)^n*Log[F]]*Log[F]^2)/(2*d*n)
```

Rubi [A] time = 0.18833, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{b^2F^a\log^2(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{2dn}-\frac{(c+dx)^{-2n}F^{a+b(c+dx)^n}}{2dn}-\frac{b\log(F)(c+dx)^{-n}F^{a+b(c+dx)^n}}{2dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 2*n),x]
```

```
[Out] -F^(a + b*(c + d*x)^n)/(2*d*n*(c + d*x)^(2*n)) - (b*F^(a + b*(c +
 d*x)^n)*Log[F])/(2*d*n*(c + d*x)^n) + (b^2*F^a*ExpIntegralEi[b*(
c + d*x)^n*Log[F]]*Log[F]^2)/(2*d*n)
```

Rubi in Sympy [A] time = 16.2958, size = 83, normalized size = 0.83

$$\frac{F^ab^2\log(F)^2\operatorname{Ei}\left(b(c+dx)^n\log(F)\right)}{2dn}-\frac{F^{a+b(c+dx)^n}b(c+dx)^{-n}\log(F)}{2dn}-\frac{F^{a+b(c+dx)^n}(c+dx)^{-2n}}{2dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-2*n),x)
```

```
[Out] F**a*b**2*log(F)**2*Ei(b*(c + d*x)**n*log(F))/(2*d*n) - F**(a + b
*(c + d*x)**n)*b*(c + d*x)**(-n)*log(F)/(2*d*n) - F**(a + b*(c +
d*x)**n)*(c + d*x)**(-2*n)/(2*d*n)
```

Mathematica [A] time = 0.0716282, size = 78, normalized size = 0.78

$$\frac{F^a(c+dx)^{-2n}\left(b^2\log^2(F)(c+dx)^{2n}\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)-F^{b(c+dx)^n}\left(b\log(F)(c+dx)^n+1\right)\right)}{2dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 2*n),x]
```

```
[Out] (F^a*(b^2*(c + d*x)^(2*n)*ExpIntegralEi[b*(c + d*x)^n*Log[F]]*Log
[F]^2 - F^(b*(c + d*x)^n)*(1 + b*(c + d*x)^n*Log[F])))/(2*d*n*(c
+ d*x)^(2*n))
```

Maple [A] time = 0.1, size = 97, normalized size = 1.

$$-\frac{F^{a+b(dx+c)^n}}{2\,dn\left((dx+c)^n\right)^2}-\frac{bF^{a+b(dx+c)^n}\ln(F)}{2\,dn\,(dx+c)^n}-\frac{(\ln(F))^2\,b^2F^a\,Ei\left(1,-b\,(dx+c)^n\ln(F)\right)}{2\,dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1-2*n),x)
```

```
[Out] -1/2/d/n*F^(a+b*(d*x+c)^n)/((d*x+c)^n)^2-1/2*b*F^(a+b*(d*x+c)^n)*
ln(F)/d/n/((d*x+c)^n)-1/2/d/n*b^2*ln(F)^2*F^a*Ei(1,-b*(d*x+c)^n*l
n(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-2n-1} F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-2*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(-2*n - 1)*F^((d*x + c)^n*b + a), x)
```

Fricas [A] time = 0.262139, size = 113, normalized size = 1.13

$$\frac{(dx+c)^{2n} F^a b^2 \operatorname{Ei}\left((dx+c)^n b \log(F)\right) \log(F)^2 - \left((dx+c)^n b \log(F) + 1\right) e^{\left((dx+c)^n b \log(F) + a \log(F)\right)}}{2\,(dx+c)^{2n} dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-2*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*((d*x + c)^(2*n)*F^a*b^2*Ei((d*x + c)^n*b*log(F))*log(F)^2 -
((d*x + c)^n*b*log(F) + 1)*e^((d*x + c)^n*b*log(F) + a*log(F)))/(
(d*x + c)^(2*n)*d*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-2n-1} F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-2*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(-2*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.377 $\int F^{a+b(c+dx)^n}(c+dx)^{-1-3n}\,dx$

Optimal. Leaf size=139

$$\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{6dn}-\frac{b^2\log^2(F)(c+dx)^{-n}F^{a+b(c+dx)^n}}{6dn}-\frac{(c+dx)^{-3n}F^{a+b(c+dx)^n}}{3dn}-\frac{b\log(F)(c+dx)^{-2n}F^{a+b(c+dx)^n}}{6dn}$$

```
[Out] -F^(a + b*(c + d*x)^n)/(3*d*n*(c + d*x)^(3*n)) - (b*F^(a + b*(c +
 d*x)^n)*Log[F])/(6*d*n*(c + d*x)^(2*n)) - (b^2*F^(a + b*(c + d*x
)^n)*Log[F]^2)/(6*d*n*(c + d*x)^n) + (b^3*F^a*ExpIntegralEi[b*(c
+ d*x)^n*Log[F]]*Log[F]^3)/(6*d*n)
```

Rubi [A] time = 0.267517, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{b^3F^a\log^3(F)\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)}{6dn}-\frac{b^2\log^2(F)(c+dx)^{-n}F^{a+b(c+dx)^n}}{6dn}-\frac{(c+dx)^{-3n}F^{a+b(c+dx)^n}}{3dn}-\frac{b\log(F)(c+dx)^{-2n}F^{a+b(c+dx)^n}}{6dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 3*n),x]
```

```
[Out] -F^(a + b*(c + d*x)^n)/(3*d*n*(c + d*x)^(3*n)) - (b*F^(a + b*(c +
 d*x)^n)*Log[F])/(6*d*n*(c + d*x)^(2*n)) - (b^2*F^(a + b*(c + d*x
)^n)*Log[F]^2)/(6*d*n*(c + d*x)^n) + (b^3*F^a*ExpIntegralEi[b*(c
+ d*x)^n*Log[F]]*Log[F]^3)/(6*d*n)
```

Rubi in Sympy [A] time = 24.544, size = 117, normalized size = 0.84

$$\frac{F^ab^3\log(F)^3\,\text{Ei}\left(b\left(c+dx\right)^n\log(F)\right)}{6dn}-\frac{F^{a+b(c+dx)^n}b^2\left(c+dx\right)^{-n}\log(F)^2}{6dn}-\frac{F^{a+b(c+dx)^n}b\left(c+dx\right)^{-2n}\log(F)}{6dn}-\frac{F^{a+b(c+dx)^n}\left(c+dx\right)^{-3n}}{3dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-3*n),x)
```

```
[Out] F**a*b**3*log(F)**3*Ei(b*(c + d*x)**n*log(F))/(6*d*n) - F**(a + b
*(c + d*x)**n)*b**2*(c + d*x)**(-n)*log(F)**2/(6*d*n) - F**(a + b
*(c + d*x)**n)*b*(c + d*x)**(-2*n)*log(F)/(6*d*n) - F**(a + b*(c
+ d*x)**n)*(c + d*x)**(-3*n)/(3*d*n)
```

Mathematica [A] time = 0.0892596, size = 95, normalized size = 0.68

$$\frac{F^a(c+dx)^{-3n}\left(b^3\log^3(F)(c+dx)^{3n}\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)-F^{b(c+dx)^n}\left(b^2\log^2(F)(c+dx)^{2n}+b\log(F)(c+dx)^n+\right.\right.}{6dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 3*n),x]
```

```
[Out] (F^a*(b^3*(c + d*x)^(3*n)*ExpIntegralEi[b*(c + d*x)^n*Log[F]]*Log
[F]^3 - F^(b*(c + d*x)^n)*(2 + b*(c + d*x)^n*Log[F] + b^2*(c + d*
x)^(2*n)*Log[F]^2)))/(6*d*n*(c + d*x)^(3*n))
```

Maple [A] time = 0.037, size = 134, normalized size = 1.

$$-\frac{F^{a+b(dx+c)^n}}{3\,dn\left((dx+c)^n\right)^3}-\frac{b\ln(F)\,F^{a+b(dx+c)^n}}{6\,dn\left((dx+c)^n\right)^2}-\frac{b^2F^{a+b(dx+c)^n}\left(\ln(F)\right)^2}{6\,dn\,(dx+c)^n}-\frac{\left(\ln(F)\right)^3b^3F^aEi\left(1,-b\,(dx+c)^n\ln(F)\right)}{6\,dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1-3*n),x)
```

```
[Out] -1/3/n/d*F^(a+b*(d*x+c)^n)/((d*x+c)^n)^3-1/6/n/d*b*ln(F)*F^(a+b*(
d*x+c)^n)/((d*x+c)^n)^2-1/6*b^2*F^(a+b*(d*x+c)^n)*ln(F)^2/d/n/((d
*x+c)^n)-1/6/n/d*b^3*ln(F)^3*F^a*Ei(1,-b*(d*x+c)^n*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int(dx+c)^{-3n-1}F^{(dx+c)^nb+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-3*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(-3*n - 1)*F^((d*x + c)^n*b + a), x)
```

Fricas [A] time = 0.26614, size = 136, normalized size = 0.98

$$\frac{(dx+c)^{3n}F^ab^3\mathrm{Ei}\left((dx+c)^nb\log(F)\right)\log(F)^3-\left((dx+c)^{2n}b^2\log(F)^2+(dx+c)^nb\log(F)+2\right)e^{\left((dx+c)^nb\log(F)+a\log(F)\right)}}{6\,(dx+c)^{3n}dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-3*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] 1/6*((d*x + c)^(3*n)*F^a*b^3*Ei((d*x + c)^n*b*log(F))*log(F)^3 -
((d*x + c)^(2*n)*b^2*log(F)^2 + (d*x + c)^n*b*log(F) + 2)*e^((d*x
 + c)^n*b*log(F) + a*log(F)))/((d*x + c)^(3*n)*d*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-3*n),x)
```

```
[Out] Timed out
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int (dx + c)^{-3\,n-1} F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(-3*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.378 $\int F^{a+b(c+dx)^n}(c+dx)^{-1-4n}\,dx$

Optimal. Leaf size=32

$$-\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] -((b^4*F^a*Gamma[-4, -(b*(c + d*x)^n*Log[F])]*Log[F]^4)/(d*n))
```

Rubi [A] time = 0.0664704, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.04$

$$-\frac{b^4F^a\log^4(F)\text{Gamma}\left(-4,-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In] Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 4*n),x]
```

```
[Out] -((b^4*F^a*Gamma[-4, -(b*(c + d*x)^n*Log[F])]*Log[F]^4)/(d*n))
```

Rubi in Sympy [A] time = 6.26985, size = 32, normalized size = 1.

$$-\frac{F^ab^4(-4,-b\,(c+dx)^n\log(F))\log(F)^4}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-4*n),x)
```

```
[Out] -F**a*b**4*Gamma(-4, -b*(c + d*x)**n*log(F))*log(F)**4/(d*n)
```

Mathematica [B] time = 0.104095, size = 113, normalized size = 3.53

$$\frac{F^a(c+dx)^{-4n}\left(b^4\log^4(F)(c+dx)^{4n}\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)-F^{b(c+dx)^n}\left(b^3\log^3(F)(c+dx)^{3n}+b^2\log^2(F)(c+dx)^2\right.\right.}{24dn}$$

Antiderivative was successfully verified.

```
[In] Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 4*n),x]
```

```
[Out] (F^a*(b^4*(c + d*x)^(4*n)*ExpIntegralEi[b*(c + d*x)^n*Log[F]]*Log
[F]^4 - F^(b*(c + d*x)^n)*(6 + 2*b*(c + d*x)^n*Log[F] + b^2*(c +
d*x)^(2*n)*Log[F]^2 + b^3*(c + d*x)^(3*n)*Log[F]^3)))/(24*d*n*(c
+ d*x)^(4*n))
```

Maple [B] time = 0.041, size = 171, normalized size = 5.3

$$-\frac{F^{a+b(dx+c)^n}}{4\,dn\,((dx+c)^n)^4}-\frac{b\ln(F)\,F^{a+b(dx+c)^n}}{12\,dn\,((dx+c)^n)^3}-\frac{(\ln(F))^2\,b^2F^{a+b(dx+c)^n}}{24\,dn\,((dx+c)^n)^2}-\frac{(\ln(F))^3\,b^3F^{a+b(dx+c)^n}}{24\,dn\,(dx+c)^n}-\frac{(\ln(F))^4\,b^4F^aEi\left(1,-b\,(dx+c)^n\ln(F)\right)}{24\,dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1-4*n),x)
```

```
[Out] -1/4/n/d*F^(a+b*(d*x+c)^n)/((d*x+c)^n)^4-1/12/n/d*b*ln(F)*F^(a+b*
(d*x+c)^n)/((d*x+c)^n)^3-1/24/n/d*b^2*ln(F)^2*F^(a+b*(d*x+c)^n)/(
(d*x+c)^n)^2-1/24/n/d*b^3*ln(F)^3*F^(a+b*(d*x+c)^n)/((d*x+c)^n)-1
/24/n/d*b^4*ln(F)^4*F^a*Ei(1,-b*(d*x+c)^n*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-4n-1} F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-4*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(-4*n - 1)*F^((d*x + c)^n*b + a), x)
```

Fricas [A] time = 0.264047, size = 161, normalized size = 5.03

$$\frac{(dx+c)^{4n} F^a b^4 \mathrm{Ei}\left((dx+c)^n b \log(F)\right) \log(F)^4 - \left((dx+c)^{3n} b^3 \log(F)^3 + (dx+c)^{2n} b^2 \log(F)^2 + 2\,(dx+c)^n b \log(F) + 6\right) e^{((dx}}{24\,(dx+c)^{4n} dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-4*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] 1/24*((d*x + c)^(4*n)*F^a*b^4*Ei((d*x + c)^n*b*log(F))*log(F)^4 -
 ((d*x + c)^(3*n)*b^3*log(F)^3 + (d*x + c)^(2*n)*b^2*log(F)^2 + 2
*(d*x + c)^n*b*log(F) + 6)*e^((d*x + c)^n*b*log(F) + a*log(F)))/(
(d*x + c)^(4*n)*d*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-4*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-4n-1} F^{(dx+c)^n b+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-4*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(-4*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.379 $\int F^{a+b(c+dx)^n}(c+dx)^{-1-5n}\,dx$

Optimal. Leaf size=31

$$\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-b\log(F)(c+dx)^n\right)}{dn}$$

```
[Out] (b^5*F^a*Gamma[-5, -(b*(c + d*x)^n*Log[F])]*Log[F]^5)/(d*n)
```

Rubi [A] time = 0.0659408, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.04

$$\frac{b^5F^a\log^5(F)\text{Gamma}\left(-5,-b\log(F)(c+dx)^n\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 5*n),x]
```

```
[Out] (b^5*F^a*Gamma[-5, -(b*(c + d*x)^n*Log[F])]*Log[F]^5)/(d*n)
```

Rubi in Sympy [A] time = 6.21404, size = 31, normalized size = 1.

$$\frac{F^ab^5(-5,-b\,(c+dx)^n\log{(F)})\log{(F)}^5}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-5*n),x)
```

```
[Out] F**a*b**5*Gamma(-5, -b*(c + d*x)**n*log(F))*log(F)**5/(d*n)
```

Mathematica [B] time = 0.118455, size = 131, normalized size = 4.23

$$\frac{F^a(c+dx)^{-5n}\left(b^5\log^5(F)(c+dx)^{5n}\text{ExpIntegralEi}\left(b\log(F)(c+dx)^n\right)-F^{b(c+dx)^n}\left(b^4\log^4(F)(c+dx)^{4n}+b^3\log^3(F)(c+dx)^3\right.\right.}{120dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^n)*(c + d*x)^(-1 - 5*n),x]
```

```
[Out] (F^a*(b^5*(c + d*x)^(5*n)*ExpIntegralEi[b*(c + d*x)^n*Log[F]]*Log
[F]^5 - F^(b*(c + d*x)^n)*(24 + 6*b*(c + d*x)^n*Log[F] + 2*b^2*(c
 + d*x)^(2*n)*Log[F]^2 + b^3*(c + d*x)^(3*n)*Log[F]^3 + b^4*(c +
d*x)^(4*n)*Log[F]^4)))/(120*d*n*(c + d*x)^(5*n))
```

Maple [B] time = 0.043, size = 208, normalized size = 6.7

$$-\frac{F^{a+b(dx+c)^n}}{5\,dn\,((dx+c)^n)^5}-\frac{b\ln(F)\,F^{a+b(dx+c)^n}}{20\,dn\,((dx+c)^n)^4}-\frac{(\ln(F))^2\,b^2F^{a+b(dx+c)^n}}{60\,dn\,((dx+c)^n)^3}-\frac{(\ln(F))^3\,b^3F^{a+b(dx+c)^n}}{120\,dn\,((dx+c)^n)^2}$$
$$-\frac{(\ln(F))^4\,b^4F^{a+b(dx+c)^n}}{120\,dn\,(dx+c)^n}-\frac{(\ln(F))^5\,b^5F^aEi\left(1,-b\,(dx+c)^n\ln(F)\right)}{120\,dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^n)*(d*x+c)^(-1-5*n),x)
```

```
[Out] -1/5/n/d*F^(a+b*(d*x+c)^n)/((d*x+c)^n)^5-1/20/n/d*b*ln(F)*F^(a+b*
(d*x+c)^n)/((d*x+c)^n)^4-1/60/n/d*b^2*ln(F)^2*F^(a+b*(d*x+c)^n)/(
(d*x+c)^n)^3-1/120/n/d*b^3*ln(F)^3*F^(a+b*(d*x+c)^n)/((d*x+c)^n)^
2-1/120/n/d*b^4*ln(F)^4*F^(a+b*(d*x+c)^n)/((d*x+c)^n)-1/120/n/d*b
^5*ln(F)^5*F^a*Ei(1,-b*(d*x+c)^n*ln(F))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-5n-1} F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-5*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(-5*n - 1)*F^((d*x + c)^n*b + a), x)
```

Fricas [A] time = 0.256495, size = 185, normalized size = 5.97

$$\frac{(dx+c)^{5n}F^a b^5 \mathrm{Ei}\left((dx+c)^n b\log(F)\right)\log(F)^5 - \left((dx+c)^{4n}b^4\log(F)^4 + (dx+c)^{3n}b^3\log(F)^3 + 2\,(dx+c)^{2n}b^2\log(F)^2 + 6\,(d\right.}{120\,(dx+c)^{5n}dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-5*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="fricas")
```

```
[Out] 1/120*((d*x + c)^(5*n)*F^a*b^5*Ei((d*x + c)^n*b*log(F))*log(F)^5
- ((d*x + c)^(4*n)*b^4*log(F)^4 + (d*x + c)^(3*n)*b^3*log(F)^3 +
2*(d*x + c)^(2*n)*b^2*log(F)^2 + 6*(d*x + c)^n*b*log(F) + 24)*e^(
(d*x + c)^n*b*log(F) + a*log(F)))/((d*x + c)^(5*n)*d*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**n)*(d*x+c)**(-1-5*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{-5n-1} F^{(dx+c)^n b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-5*n - 1)*F^((d*x + c)^n*b + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(-5*n - 1)*F^((d*x + c)^n*b + a), x)
```

3.380 $\int F^{c(a+bx)^n}(a+bx)^{-1+\frac{n}{2}}\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(F)}(a+bx)^{n/2}\right)}{b\sqrt{c}n\sqrt{\log(F)}}$$

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)^(n/2)*Sqrt[Log[F]]])/(b*Sqrt[c]*
n*Sqrt[Log[F]])
```

Rubi [A] time = 0.0784218, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{\sqrt{\pi}\text{Erfi}\left(\sqrt{c}\sqrt{\log(F)}(a+bx)^{n/2}\right)}{b\sqrt{c}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(c*(a + b*x)^n)*(a + b*x)^(-1 + n/2),x]
```

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[c]*(a + b*x)^(n/2)*Sqrt[Log[F]]])/(b*Sqrt[c]*
n*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 7.31634, size = 41, normalized size = 0.87

$$\frac{\sqrt{\pi}\,\text{erfi}\left(\sqrt{c}\,(a+bx)^{\frac{n}{2}}\,\sqrt{\log(F)}\right)}{b\sqrt{c}n\sqrt{\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(c*(b*x+a)**n)*(b*x+a)**(-1+1/2*n),x)
```

```
[Out] sqrt(pi)*erfi(sqrt(c)*(a + b*x)**(n/2)*sqrt(log(F)))/(b*sqrt(c)*n
*sqrt(log(F)))
```

Mathematica [A] time = 0.0570414, size = 0, normalized size = 0.

$$\int F^{c(a+bx)^n}(a+bx)^{-1+\frac{n}{2}}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(c*(a + b*x)^n)*(a + b*x)^(-1 + n/2),x]
```

```
[Out] Integrate[F^(c*(a + b*x)^n)*(a + b*x)^(-1 + n/2), x]
```

Maple [A] time = 0.111, size = 36, normalized size = 0.8

$$\frac{\sqrt{\pi}}{bn}Erf\left(\sqrt{-c\ln(F)}\,(bx+a)^{\frac{n}{2}}\right)\frac{1}{\sqrt{-c\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(c*(b*x+a)^n)*(b*x+a)^(-1+1/2*n),x)
```

```
[Out] 1/n/b*Pi^(1/2)/(-c*ln(F))^(1/2)*erf((-c*ln(F))^(1/2)*(b*x+a)^(1/2
*n))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{2}n-1}F^{(bx+a)^n c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/2*n - 1)*F^((b*x + a)^n*c),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/2*n - 1)*F^((b*x + a)^n*c), x)
```

Fricas [A] time = 0.262004, size = 57, normalized size = 1.21

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left((bx+a)\sqrt{-c\log(F)}(bx+a)^{\frac{1}{2}n-1}\right)}{\sqrt{-c\log(F)}bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/2*n - 1)*F^((b*x + a)^n*c),x, algorithm="fricas")
```

```
[Out] sqrt(pi)*erf((b*x + a)*sqrt(-c*log(F))*(b*x + a)^(1/2*n - 1))/(sq
rt(-c*log(F))*b*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(c*(b*x+a)**n)*(b*x+a)**(-1+1/2*n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{2}n-1}F^{(bx+a)^n c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/2*n - 1)*F^((b*x + a)^n*c),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(1/2*n - 1)*F^((b*x + a)^n*c), x)
```

3.381 $\int F^{-c(a+bx)^n}(a+bx)^{-1+\frac{n}{2}}\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{\pi}\text{Erf}\left(\sqrt{c}\sqrt{\log(F)}(a+bx)^{n/2}\right)}{b\sqrt{c}n\sqrt{\log(F)}}$$

```
[Out] (Sqrt[Pi]*Erf[Sqrt[c]*(a + b*x)^(n/2)*Sqrt[Log[F]]])/(b*Sqrt[c]*n
*Sqrt[Log[F]])
```

Rubi [A] time = 0.0796287, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{\sqrt{\pi}\text{Erf}\left(\sqrt{c}\sqrt{\log(F)}(a+bx)^{n/2}\right)}{b\sqrt{c}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-1 + n/2)/F^(c*(a + b*x)^n),x]
```

```
[Out] (Sqrt[Pi]*Erf[Sqrt[c]*(a + b*x)^(n/2)*Sqrt[Log[F]]])/(b*Sqrt[c]*n
*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 7.67416, size = 41, normalized size = 0.87

$$\frac{\sqrt{\pi}\operatorname{erf}\left(\sqrt{c}\,(a+bx)^{\frac{n}{2}}\sqrt{\log\left(F\right)}\right)}{b\sqrt{c}n\sqrt{\log\left(F\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-1+1/2*n)/(F**(c*(b*x+a)**n)),x)
```

```
[Out] sqrt(pi)*erf(sqrt(c)*(a + b*x)**(n/2)*sqrt(log(F)))/(b*sqrt(c)*n*
sqrt(log(F)))
```

Mathematica [A] time = 0.054392, size = 0, normalized size = 0.

$$\int F^{-c(a+bx)^n}(a+bx)^{-1+\frac{n}{2}}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^(-1 + n/2)/F^(c*(a + b*x)^n),x]
```

```
[Out] Integrate[(a + b*x)^(-1 + n/2)/F^(c*(a + b*x)^n), x]
```

Maple [A] time = 0.099, size = 34, normalized size = 0.7

$$\frac{\sqrt{\pi}}{bn}Erf\left(\sqrt{c\ln\left(F\right)}\left(bx+a\right)^{\frac{n}{2}}\right)\frac{1}{\sqrt{c\ln\left(F\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-1+1/2*n)/(F^(c*(b*x+a)^n)),x)
```

```
[Out] 1/n/b*Pi^(1/2)/(c*ln(F))^(1/2)*erf((c*ln(F))^(1/2)*(b*x+a)^(1/2*n
))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{2}n-1}}{F^{(bx+a)^n c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(1/2*n - 1)/F^((b*x + a)^n*c),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/2*n - 1)/F^((b*x + a)^n*c), x)
```

Fricas [A] time = 0.275886, size = 54, normalized size = 1.15

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left((bx+a)\sqrt{c\log(F)}(bx+a)^{\frac{1}{2}n-1}\right)}{\sqrt{c\log(F)}bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(1/2*n - 1)/F^((b*x + a)^n*c),x, algorithm="fricas")
```

```
[Out] sqrt(pi)*erf((b*x + a)*sqrt(c*log(F))*(b*x + a)^(1/2*n - 1))/(sqr
t(c*log(F))*b*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-1+1/2*n)/(F**(c*(b*x+a)**n)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{2}n-1}}{F^{(bx+a)^n c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(1/2*n - 1)/F^((b*x + a)^n*c),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(1/2*n - 1)/F^((b*x + a)^n*c), x)
```

3.382 $\int F^{a+b(c+dx)^2}(e+fx)^5\,dx$

Optimal. Leaf size=518

$$\frac{15\sqrt{\pi}f^4F^a(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{8b^{5/2}d^6\log^{\frac{5}{2}}(F)} - \frac{5\sqrt{\pi}f^2F^a(de-cf)^3\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2b^{3/2}d^6\log^{\frac{3}{2}}(F)} + \frac{f^5F^{a+b(c+dx)^2}}{b^3d^6\log^3(F)} - \frac{15f^4(c+dx)(de-cf)F^{a+b(c+dx)^2}}{4b^2d^6\log^2(F)} - \frac{5f^3(de-cf)^2F^{a+b(c+dx)^2}}{b^2d^6\log^2(F)} - \frac{f^5(c+dx)^2F^{a+b(c+dx)^2}}{b^2d^6\log^2(F)} + \frac{\sqrt{\pi}F^a(de-cf)^5\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^6\sqrt{\log(F)}} + \frac{5f^4(c+dx)^3(de-cf)F^{a+b(c+dx)^2}}{2bd^6\log(F)} + \frac{5f^3(c+dx)^2(de-cf)^2F^{a+b(c+dx)^2}}{bd^6\log(F)} + \frac{5f^2(c+dx)(de-cf)^3F^{a+b(c+dx)^2}}{bd^6\log(F)} + \frac{5f(de-cf)^4F^{a+b(c+dx)^2}}{2bd^6\log(F)} + \frac{f^5(c+dx)^4F^{a+b(c+dx)^2}}{2bd^6\log(F)}$$

```
[Out] (f^5*F^(a + b*(c + d*x)^2))/(b^3*d^6*Log[F]^3) + (15*f^4*(d*e - c
*f)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(8*b^(5/2)
*d^6*Log[F]^(5/2)) - (5*f^3*(d*e - c*f)^2*F^(a + b*(c + d*x)^2))/
(b^2*d^6*Log[F]^2) - (15*f^4*(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c
 + d*x))/(4*b^2*d^6*Log[F]^2) - (f^5*F^(a + b*(c + d*x)^2)*(c + d
*x)^2)/(b^2*d^6*Log[F]^2) - (5*f^2*(d*e - c*f)^3*F^a*Sqrt[Pi]*Erf
i[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*b^(3/2)*d^6*Log[F]^(3/2)) +
 (5*f*(d*e - c*f)^4*F^(a + b*(c + d*x)^2))/(2*b*d^6*Log[F]) + (5*
f^2*(d*e - c*f)^3*F^(a + b*(c + d*x)^2)*(c + d*x))/(b*d^6*Log[F])
 + (5*f^3*(d*e - c*f)^2*F^(a + b*(c + d*x)^2)*(c + d*x)^2)/(b*d^6
*Log[F]) + (5*f^4*(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/
(2*b*d^6*Log[F]) + (f^5*F^(a + b*(c + d*x)^2)*(c + d*x)^4)/(2*b*d
^6*Log[F]) + ((d*e - c*f)^5*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*S
qrt[Log[F]]])/(2*Sqrt[b]*d^6*Sqrt[Log[F]])
```

Rubi [A] time = 1.54851, antiderivative size = 518, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.19$

$$\frac{15\sqrt{\pi}f^4F^a(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{8b^{5/2}d^6\log^{\frac{5}{2}}(F)} - \frac{5\sqrt{\pi}f^2F^a(de-cf)^3\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2b^{3/2}d^6\log^{\frac{3}{2}}(F)} + \frac{f^5F^{a+b(c+dx)^2}}{b^3d^6\log^3(F)} - \frac{15f^4(c+dx)(de-cf)F^{a+b(c+dx)^2}}{4b^2d^6\log^2(F)} - \frac{5f^3(de-cf)^2F^{a+b(c+dx)^2}}{b^2d^6\log^2(F)} - \frac{f^5(c+dx)^2F^{a+b(c+dx)^2}}{b^2d^6\log^2(F)} + \frac{\sqrt{\pi}F^a(de-cf)^5\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^6\sqrt{\log(F)}} + \frac{5f^4(c+dx)^3(de-cf)F^{a+b(c+dx)^2}}{2bd^6\log(F)} + \frac{5f^3(c+dx)^2(de-cf)^2F^{a+b(c+dx)^2}}{bd^6\log(F)} + \frac{5f^2(c+dx)(de-cf)^3F^{a+b(c+dx)^2}}{bd^6\log(F)} + \frac{5f(de-cf)^4F^{a+b(c+dx)^2}}{2bd^6\log(F)} + \frac{f^5(c+dx)^4F^{a+b(c+dx)^2}}{2bd^6\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(e + f*x)^5,x]
```


```
[Out] (f^5*F^(a + b*(c + d*x)^2))/(b^3*d^6*Log[F]^3) + (15*f^4*(d*e - c
*f)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(8*b^(5/2)
```

```
*d^6*Log[F]^(5/2)) - (5*f^3*(d*e - c*f)^2*F^(a + b*(c + d*x)^2))/
(b^2*d^6*Log[F]^2) - (15*f^4*(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c
 + d*x))/(4*b^2*d^6*Log[F]^2) - (f^5*F^(a + b*(c + d*x)^2)*(c + d
*x)^2)/(b^2*d^6*Log[F]^2) - (5*f^2*(d*e - c*f)^3*F^a*Sqrt[Pi]*Erf
i[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*b^(3/2)*d^6*Log[F]^(3/2)) +
 (5*f*(d*e - c*f)^4*F^(a + b*(c + d*x)^2))/(2*b*d^6*Log[F]) + (5*
f^2*(d*e - c*f)^3*F^(a + b*(c + d*x)^2)*(c + d*x))/(b*d^6*Log[F])
 + (5*f^3*(d*e - c*f)^2*F^(a + b*(c + d*x)^2)*(c + d*x)^2)/(b*d^6
*Log[F]) + (5*f^4*(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/
(2*b*d^6*Log[F]) + (f^5*F^(a + b*(c + d*x)^2)*(c + d*x)^4)/(2*b*d
^6*Log[F]) + ((d*e - c*f)^5*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*S
qrt[Log[F]]])/(2*Sqrt[b]*d^6*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 131.775, size = 493, normalized size = 0.95

$$-\frac{\sqrt{\pi}F^{a}\left(cf-de\right)^{5}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2\sqrt{b}d^{6}\sqrt{\log\left(F\right)}}+\frac{5\sqrt{\pi}F^{a}f^{2}\left(cf-de\right)^{3}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2b^{\frac{3}{2}}d^{6}\log\left(F\right)^{\frac{3}{2}}}-\frac{15\sqrt{\pi}F^{a}f^{4}\left(cf-de\right)\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{8b^{\frac{5}{2}}d^{6}\log\left(F\right)^{\frac{5}{2}}}+\frac{F^{a+b(c+dx)^{2}}f^{5}\left(c+dx\right)^{4}}{2bd^{6}\log\left(F\right)}-\frac{5F^{a+b(c+dx)^{2}}f^{4}\left(c+dx\right)^{3}\left(cf-de\right)}{2bd^{6}\log\left(F\right)}+\frac{5F^{a+b(c+dx)^{2}}f^{3}\left(c+dx\right)^{2}\left(cf-de\right)^{2}}{bd^{6}\log\left(F\right)}-\frac{5F^{a+b(c+dx)^{2}}f^{2}\left(c+dx\right)\left(cf-de\right)^{3}}{bd^{6}\log\left(F\right)}+\frac{5F^{a+b(c+dx)^{2}}f\left(cf-de\right)^{4}}{2bd^{6}\log\left(F\right)}-\frac{F^{a+b(c+dx)^{2}}f^{5}\left(c+dx\right)^{2}}{b^{2}d^{6}\log\left(F\right)^{2}}+\frac{15F^{a+b(c+dx)^{2}}f^{4}\left(c+dx\right)\left(cf-de\right)}{4b^{2}d^{6}\log\left(F\right)^{2}}-\frac{5F^{a+b(c+dx)^{2}}f^{3}\left(cf-de\right)^{2}}{b^{2}d^{6}\log\left(F\right)^{2}}+\frac{F^{a+b(c+dx)^{2}}f^{5}}{b^{3}d^{6}\log\left(F\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**5,x)
```

```
[Out] -sqrt(pi)*F**a*(c*f - d*e)**5*erfi(sqrt(b)*(c + d*x)*sqrt(log(F))
)/(2*sqrt(b)*d**6*sqrt(log(F))) + 5*sqrt(pi)*F**a*f**2*(c*f - d*e
)**3*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(2*b**(3/2)*d**6*log(F)
**(3/2)) - 15*sqrt(pi)*F**a*f**4*(c*f - d*e)*erfi(sqrt(b)*(c + d*
x)*sqrt(log(F)))/(8*b**(5/2)*d**6*log(F)**(5/2)) + F**(a + b*(c +
 d*x)**2)*f**5*(c + d*x)**4/(2*b*d**6*log(F)) - 5*F**(a + b*(c +
d*x)**2)*f**4*(c + d*x)**3*(c*f - d*e)/(2*b*d**6*log(F)) + 5*F**(
a + b*(c + d*x)**2)*f**3*(c + d*x)**2*(c*f - d*e)**2/(b*d**6*log(
F)) - 5*F**(a + b*(c + d*x)**2)*f**2*(c + d*x)*(c*f - d*e)**3/(b*
d**6*log(F)) + 5*F**(a + b*(c + d*x)**2)*f*(c*f - d*e)**4/(2*b*d*
*6*log(F)) - F**(a + b*(c + d*x)**2)*f**5*(c + d*x)**2/(b**2*d**6
*log(F)**2) + 15*F**(a + b*(c + d*x)**2)*f**4*(c + d*x)*(c*f - d*
e)/(4*b**2*d**6*log(F)**2) - 5*F**(a + b*(c + d*x)**2)*f**3*(c*f
- d*e)**2/(b**2*d**6*log(F)**2) + F**(a + b*(c + d*x)**2)*f**5/(b
**3*d**6*log(F)**3)
```

Mathematica [A] time = 0.792038, size = 318, normalized size = 0.61

$$\frac{F^{a}\left(2fF^{b(c+dx)^{2}}\left(2b^{2}\log^{2}(F)\left(c^{4}f^{4}-c^{3}df^{3}(5e+fx)+c^{2}d^{2}f^{2}\left(10e^{2}+5efx+f^{2}x^{2}\right)-cd^{3}f\left(10e^{3}+10e^{2}fx+5ef^{2}x^{2}+f^{3}\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(e + f*x)^5,x]
```

```
[Out] (F^a*(Sqrt[b]*(d*e - c*f)*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Lo
g[F]]]*Sqrt[Log[F]]*(15*f^4 - 20*b*f^2*(d*e - c*f)^2*Log[F] + 4*b
^2*(d*e - c*f)^4*Log[F]^2) + 2*f*F^(b*(c + d*x)^2)*(4*f^4 - b*f^2
*(9*c^2*f^2 - c*d*f*(25*e + 7*f*x) + d^2*(20*e^2 + 15*e*f*x + 4*f
^2*x^2))*Log[F] + 2*b^2*(c^4*f^4 - c^3*d*f^3*(5*e + f*x) + c^2*d^
2*f^2*(10*e^2 + 5*e*f*x + f^2*x^2) - c*d^3*f*(10*e^3 + 10*e^2*f*x
 + 5*e*f^2*x^2 + f^3*x^3) + d^4*(5*e^4 + 10*e^3*f*x + 10*e^2*f^2*
x^2 + 5*e*f^3*x^3 + f^4*x^4))*Log[F]^2)))/(8*b^3*d^6*Log[F]^3)
```

Maple [B] time = 0.077, size = 1547, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(f*x+e)^5,x)
```

```
[Out] 5/2*e^4*f/ln(F)/b/d^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/2*e^5*Pi^
(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/
(-b*ln(F))^(1/2))-5/2*f^5*c^3/d^6/ln(F)/b*Pi^(1/2)*F^a/(-b*ln(F))
^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+15/8
*f^5*c/d^6/ln(F)^2/b^2*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*l
n(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))-15/8*e*f^4/ln(F)^2/b^2/
d^5*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*l
n(F)/(-b*ln(F))^(1/2))+5/2*e^3*f^2/ln(F)/b/d^3*Pi^(1/2)*F^a/(-b*l
n(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))
-5*e^2*f^3/ln(F)^2/b^2/d^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2*f^
5/ln(F)/b/d^2*x^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+1/2*f^5*c^4/d^6
/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-9/4*f^5*c^2/d^6/ln(F)^2/
b^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-f^5/ln(F)^2/b^2/d^4*x^2*F^(b*
d^2*x^2+2*b*c*d*x+b*c^2+a)-1/2*f^5*c/d^3/ln(F)/b*x^3*F^(b*d^2*x^2
+2*b*c*d*x+b*c^2+a)+1/2*f^5*c^2/d^4/ln(F)/b*x^2*F^(b*d^2*x^2+2*b*
c*d*x+b*c^2+a)-1/2*f^5*c^3/d^5/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b
*c^2+a)+1/2*f^5*c^5/d^6*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*
ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+7/4*f^5*c/d^5/ln(F)^2/
b^2*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+5*e^3*f^2/ln(F)/b/d^2*x*F^(
b*d^2*x^2+2*b*c*d*x+b*c^2+a)-5*e^3*f^2*c/d^3/ln(F)/b*F^(b*d^2*x^2
+2*b*c*d*x+b*c^2+a)+f^5/ln(F)^3/b^3/d^6*F^(b*d^2*x^2+2*b*c*d*x+b*
c^2+a)-5*e^3*f^2*c^2/d^3*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b
*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+5/2*e^4*f*c/d^2*Pi^(1
/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*
ln(F))^(1/2))-5/2*e*f^4*c/d^3/ln(F)/b*x^2*F^(b*d^2*x^2+2*b*c*d*x+
b*c^2+a)+5/2*e*f^4*c^2/d^4/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2
+a)-5/2*e*f^4*c^4/d^5*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln
(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+15/2*e*f^4*c^2/d^5/ln(F)
/b*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln
(F)/(-b*ln(F))^(1/2))-15/2*e^2*f^3*c/d^4/ln(F)/b*Pi^(1/2)*F^a/(-b
*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2
))+5*e^2*f^3*c^3/d^4*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(
F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+5/2*e*f^4/ln(F)/b/d^2*x^3
*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-5/2*e*f^4*c^3/d^5/ln(F)/b*F^(b*d
^2*x^2+2*b*c*d*x+b*c^2+a)+25/4*e*f^4*c/d^5/ln(F)^2/b^2*F^(b*d^2*x
^2+2*b*c*d*x+b*c^2+a)-15/4*e*f^4/ln(F)^2/b^2/d^4*x*F^(b*d^2*x^2+2
*b*c*d*x+b*c^2+a)+5*e^2*f^3/ln(F)/b/d^2*x^2*F^(b*d^2*x^2+2*b*c*d*
x+b*c^2+a)+5*e^2*f^3*c^2/d^4/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2
+a)-5*e^2*f^3*c/d^3/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)
```

Maxima [A] time = 1.09633, size = 2430, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^5*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -5/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*e^4*f/(sqrt(b*d
^2*log(F))*F^(b*c^2)) + 5*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F
))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^
2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))
^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2
 + a)*e^3*f^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 5*(sqrt(pi)*(b*d^2
*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F)
+ b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F))^
(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) -
3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7/2
) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^2*
x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))
^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2))
)*F^(b*c^2 + a)*e^2*f^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 5/2*(sqr
t(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b*d
^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((b*
d^2*log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma(2
, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*
d^2*log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2*d
^2*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^
2/(b*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*gamm
a(5/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2
*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))
)^(5/2)))*F^(b*c^2 + a)*e*f^4/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 1/
2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b^5*c^5*d^5*(erf(sqrt
(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^
5/((b*d^2*log(F))^(11/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/
(b*d^2*log(F)))) - 5*b^5*c^4*d^6*e^((b*d^2*x*log(F) + b*c*d*log(F
))^2/(b*d^2*log(F)))*log(F)^5/(b*d^2*log(F))^(11/2) + 10*b^4*c^2*
d^6*gamma(2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*l
og(F)^4/(b*d^2*log(F))^(11/2) - 10*(b*d^2*x*log(F) + b*c*d*log(F)
)^3*b^3*c^3*d^3*gamma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))*log(F)^3/((b*d^2*log(F))^(11/2)*(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)) - b^3*d^6*gamma(3, -(b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*log(F
))^(11/2) - 5*(b*d^2*x*log(F) + b*c*d*log(F))^5*b*c*d*gamma(5/2,
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2
*log(F))^(11/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))^(5/2)))*F^(b*c^2 + a)*f^5/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2
*sqrt(pi)*F^(b*c^2 + a)*e^5*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/
sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.282864, size = 749, normalized size = 1.45

$$\frac{\sqrt{\pi}\left(4\left(b^3d^6e^5-5\,b^3cd^5e^4f+10\,b^3c^2d^4e^3f^2-10\,b^3c^3d^3e^2f^3+5\,b^3c^4d^2ef^4-b^3c^5df^5\right)\log\left(F\right)^3-20\left(b^2d^4e^3f^2-3\,b^2cd^3e^2\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^5*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(pi)*(4*(b^3*d^6*e^5 - 5*b^3*c*d^5*e^4*f + 10*b^3*c^2*d^
4*e^3*f^2 - 10*b^3*c^3*d^3*e^2*f^3 + 5*b^3*c^4*d^2*e*f^4 - b^3*c^
```

```
5*d*f^5)*log(F)^3 - 20*(b^2*d^4*e^3*f^2 - 3*b^2*c*d^3*e^2*f^3 + 3
*b^2*c^2*d^2*e*f^4 - b^2*c^3*d*f^5)*log(F)^2 + 15*(b*d^2*e*f^4 -
b*c*d*f^5)*log(F))*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) + 2*(
4*f^5 + 2*(b^2*d^4*f^5*x^4 + 5*b^2*d^4*e^4*f - 10*b^2*c*d^3*e^3*f
^2 + 10*b^2*c^2*d^2*e^2*f^3 - 5*b^2*c^3*d*e*f^4 + b^2*c^4*f^5 + (
5*b^2*d^4*e*f^4 - b^2*c*d^3*f^5)*x^3 + (10*b^2*d^4*e^2*f^3 - 5*b^
2*c*d^3*e*f^4 + b^2*c^2*d^2*f^5)*x^2 + (10*b^2*d^4*e^3*f^2 - 10*b
^2*c*d^3*e^2*f^3 + 5*b^2*c^2*d^2*e*f^4 - b^2*c^3*d*f^5)*x)*log(F)
^2 - (4*b*d^2*f^5*x^2 + 20*b*d^2*e^2*f^3 - 25*b*c*d*e*f^4 + 9*b*c
^2*f^5 + (15*b*d^2*e*f^4 - 7*b*c*d*f^5)*x)*log(F))*sqrt(-b*d^2*lo
g(F))*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/(sqrt(-b*d^2*log(F))
*b^3*d^6*log(F)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**5,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.246355, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^5*F^((d*x + c)^2*b + a),x, algorithm="giac")

[Out] Done
```

3.383 $\int F^{a+b(c+dx)^2}(e+fx)^4\,dx$

Optimal. Leaf size=389

$$-\frac{3\sqrt{\pi}f^2F^a(de-cf)^2\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2b^{3/2}d^5\log^{\frac{3}{2}}(F)}+\frac{3\sqrt{\pi}f^4F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{8b^{5/2}d^5\log^{\frac{5}{2}}(F)}-\frac{2f^3(de-cf)F^{a+b(c+dx)^2}}{b^2d^5\log^2(F)}-\frac{3f^4(c+dx)F^{a+b(c+dx)^2}}{4b^2d^5\log^2(F)}+\frac{\sqrt{\pi}F^a(de-cf)^4\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^5\sqrt{\log(F)}}+\frac{2f^3(c+dx)^2(de-cf)F^{a+b(c+dx)^2}}{bd^5\log(F)}+\frac{3f^2(c+dx)(de-cf)^2F^{a+b(c+dx)^2}}{bd^5\log(F)}+\frac{2f(de-cf)^3F^{a+b(c+dx)^2}}{bd^5\log(F)}+\frac{f^4(c+dx)^3F^{a+b(c+dx)^2}}{2bd^5\log(F)}$$

```
[Out] (3*f^4*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(8*b^(5
/2)*d^5*Log[F]^(5/2)) - (2*f^3*(d*e - c*f)*F^(a + b*(c + d*x)^2))
/(b^2*d^5*Log[F]^2) - (3*f^4*F^(a + b*(c + d*x)^2)*(c + d*x))/(4*
b^2*d^5*Log[F]^2) - (3*f^2*(d*e - c*f)^2*F^a*Sqrt[Pi]*Erfi[Sqrt[b
]*(c + d*x)*Sqrt[Log[F]]])/(2*b^(3/2)*d^5*Log[F]^(3/2)) + (2*f*(d
*e - c*f)^3*F^(a + b*(c + d*x)^2))/(b*d^5*Log[F]) + (3*f^2*(d*e -
 c*f)^2*F^(a + b*(c + d*x)^2)*(c + d*x))/(b*d^5*Log[F]) + (2*f^3*
(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c + d*x)^2)/(b*d^5*Log[F]) + (
f^4*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(2*b*d^5*Log[F]) + ((d*e -
 c*f)^4*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqr
t[b]*d^5*Sqrt[Log[F]])
```

Rubi [A] time = 1.06951, antiderivative size = 389, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19

$$-\frac{3\sqrt{\pi}f^2F^a(de-cf)^2\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2b^{3/2}d^5\log^{\frac{3}{2}}(F)}+\frac{3\sqrt{\pi}f^4F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{8b^{5/2}d^5\log^{\frac{5}{2}}(F)}-\frac{2f^3(de-cf)F^{a+b(c+dx)^2}}{b^2d^5\log^2(F)}-\frac{3f^4(c+dx)F^{a+b(c+dx)^2}}{4b^2d^5\log^2(F)}+\frac{\sqrt{\pi}F^a(de-cf)^4\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^5\sqrt{\log(F)}}+\frac{2f^3(c+dx)^2(de-cf)F^{a+b(c+dx)^2}}{bd^5\log(F)}+\frac{3f^2(c+dx)(de-cf)^2F^{a+b(c+dx)^2}}{bd^5\log(F)}+\frac{2f(de-cf)^3F^{a+b(c+dx)^2}}{bd^5\log(F)}+\frac{f^4(c+dx)^3F^{a+b(c+dx)^2}}{2bd^5\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(e + f*x)^4,x]
```

```
[Out] (3*f^4*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(8*b^(5
/2)*d^5*Log[F]^(5/2)) - (2*f^3*(d*e - c*f)*F^(a + b*(c + d*x)^2))
/(b^2*d^5*Log[F]^2) - (3*f^4*F^(a + b*(c + d*x)^2)*(c + d*x))/(4*
b^2*d^5*Log[F]^2) - (3*f^2*(d*e - c*f)^2*F^a*Sqrt[Pi]*Erfi[Sqrt[b
]*(c + d*x)*Sqrt[Log[F]]])/(2*b^(3/2)*d^5*Log[F]^(3/2)) + (2*f*(d
*e - c*f)^3*F^(a + b*(c + d*x)^2))/(b*d^5*Log[F]) + (3*f^2*(d*e -
 c*f)^2*F^(a + b*(c + d*x)^2)*(c + d*x))/(b*d^5*Log[F]) + (2*f^3*
(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c + d*x)^2)/(b*d^5*Log[F]) + (
f^4*F^(a + b*(c + d*x)^2)*(c + d*x)^3)/(2*b*d^5*Log[F]) + ((d*e -
 c*f)^4*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqr
t[b]*d^5*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 95.4448, size = 372, normalized size = 0.96

$$\frac{\sqrt{\pi}F^{a}\left(cf-de\right)^{4}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2\sqrt{b}d^{5}\sqrt{\log\left(F\right)}}-\frac{3\sqrt{\pi}F^{a}f^{2}\left(cf-de\right)^{2}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2b^{\frac{3}{2}}d^{5}\log\left(F\right)^{\frac{3}{2}}}+\frac{3\sqrt{\pi}F^{a}f^{4}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{8b^{\frac{5}{2}}d^{5}\log\left(F\right)^{\frac{5}{2}}}+\frac{F^{a+b(c+dx)^{2}}f^{4}\left(c+dx\right)^{3}}{2bd^{5}\log\left(F\right)}-\frac{2F^{a+b(c+dx)^{2}}f^{3}\left(c+dx\right)^{2}\left(cf-de\right)}{bd^{5}\log\left(F\right)}+\frac{3F^{a+b(c+dx)^{2}}f^{2}\left(c+dx\right)\left(cf-de\right)^{2}}{bd^{5}\log\left(F\right)}-\frac{2F^{a+b(c+dx)^{2}}f\left(cf-de\right)^{3}}{bd^{5}\log\left(F\right)}-\frac{3F^{a+b(c+dx)^{2}}f^{4}\left(c+dx\right)}{4b^{2}d^{5}\log\left(F\right)^{2}}+\frac{2F^{a+b(c+dx)^{2}}f^{3}\left(cf-de\right)}{b^{2}d^{5}\log\left(F\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**4,x)
```

```
[Out] sqrt(pi)*F**a*(c*f - d*e)**4*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))
/(2*sqrt(b)*d**5*sqrt(log(F))) - 3*sqrt(pi)*F**a*f**2*(c*f - d*e)
**2*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(2*b**(3/2)*d**5*log(F)*
*(3/2)) + 3*sqrt(pi)*F**a*f**4*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)
))/(8*b**(5/2)*d**5*log(F)**(5/2)) + F**(a + b*(c + d*x)**2)*f**4
*(c + d*x)**3/(2*b*d**5*log(F)) - 2*F**(a + b*(c + d*x)**2)*f**3*
(c + d*x)**2*(c*f - d*e)/(b*d**5*log(F)) + 3*F**(a + b*(c + d*x)*
*2)*f**2*(c + d*x)*(c*f - d*e)**2/(b*d**5*log(F)) - 2*F**(a + b*(
c + d*x)**2)*f*(c*f - d*e)**3/(b*d**5*log(F)) - 3*F**(a + b*(c +
d*x)**2)*f**4*(c + d*x)/(4*b**2*d**5*log(F)**2) + 2*F**(a + b*(c
+ d*x)**2)*f**3*(c*f - d*e)/(b**2*d**5*log(F)**2)
```

Mathematica [A] time = 0.629638, size = 220, normalized size = 0.57

$$\frac{F^{a}\left(\sqrt{\pi}\left(4b^{2}\log^{2}(F)(de-cf)^{4}-12bf^{2}\log(F)(de-cf)^{2}+3f^{4}\right)\operatorname{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)+2\sqrt{b}f\sqrt{\log(F)}F^{b(c+dx)^{2}}\left(2b\log\right.}{8b^{5/2}d^{5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(e + f*x)^4,x]
```

```
[Out] (F^a*(2*Sqrt[b]*f*F^(b*(c + d*x)^2)*Sqrt[Log[F]]*(f^2*(-8*d*e + 5
*c*f - 3*d*f*x) + 2*b*(-(c^3*f^3) + c^2*d*f^2*(4*e + f*x) - c*d^2
*f*(6*e^2 + 4*e*f*x + f^2*x^2) + d^3*(4*e^3 + 6*e^2*f*x + 4*e*f^2
*x^2 + f^3*x^3))*Log[F]) + Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[L
og[F]]]*(3*f^4 - 12*b*f^2*(d*e - c*f)^2*Log[F] + 4*b^2*(d*e - c*f
)^4*Log[F]^2)))/(8*b^(5/2)*d^5*Log[F]^(5/2))
```

Maple [B] time = 0.065, size = 998, normalized size = 2.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(f*x+e)^4,x)
```

```
[Out] -1/2*e^4*Pi^(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*
x+b*c*ln(F)/(-b*ln(F))^(1/2))+1/2*f^4/ln(F)/b/d^2*x^3*F^(b*d^2*x^
2+2*b*c*d*x+b*c^2+a)-1/2*f^4*c/d^3/ln(F)/b*x^2*F^(b*d^2*x^2+2*b*c
*d*x+b*c^2+a)+1/2*f^4*c^2/d^4/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d*x+b*
```

```
c^2+a)-1/2*f^4*c^3/d^5/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-1/
2*f^4*c^4/d^5*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/
2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+3/2*f^4*c^2/d^5/ln(F)/b*Pi^(1/2)
*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(
F))^(1/2))+5/4*f^4*c/d^5/ln(F)^2/b^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2
+a)-3/4*f^4/ln(F)^2/b^2/d^4*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3/8
*f^4/ln(F)^2/b^2/d^5*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(
F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+2*e*f^3/ln(F)/b/d^2*x^2*F
^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-2*e*f^3*c/d^3/ln(F)/b*x*F^(b*d^2*x
^2+2*b*c*d*x+b*c^2+a)+2*e*f^3*c^2/d^4/ln(F)/b*F^(b*d^2*x^2+2*b*c*
d*x+b*c^2+a)+2*e*f^3*c^3/d^4*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d
*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))-3*e*f^3*c/d^4/ln(
F)/b*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*
ln(F)/(-b*ln(F))^(1/2))-2*e*f^3/ln(F)^2/b^2/d^4*F^(b*d^2*x^2+2*b*
c*d*x+b*c^2+a)+3*e^2*f^2/ln(F)/b/d^2*x*F^(b*d^2*x^2+2*b*c*d*x+b*c
^2+a)-3*e^2*f^2*c/d^3/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3*e
^2*f^2*c^2/d^3*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1
/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+3/2*e^2*f^2/ln(F)/b/d^3*Pi^(1/2
)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln
(F))^(1/2))+2*e^3*f/ln(F)/b/d^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+2
*e^3*f*c/d^2*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2
)*x+b*c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 1.05724, size = 1755, normalized size = 4.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^4*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d
^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*l
og(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*e^3*f/(sqrt(b*d^2
*log(F))*F^(b*c^2)) + 3*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))
*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*
log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*log(
F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x*l
og(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(
5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(b*
d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2 +
 a)*e^2*f^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 2*(sqrt(pi)*(b*d^2*x
*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F) +
b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F))^(7
/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 3*
b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*
log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7/2)
- 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F))^(
7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*
F^(b*c^2 + a)*e*f^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*(sqrt(pi
)*(b*d^2*x*log(F) + b*c*d*log(F))*b^4*c^4*d^4*(erf(sqrt(-(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^4/((b*d^2*
log(F))^(9/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(
F)))) - 4*b^4*c^3*d^5*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))*log(F)^4/(b*d^2*log(F))^(9/2) + 4*b^3*c*d^5*gamma(2, -(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^3/(b*d^2*
log(F))^(9/2) - 6*(b*d^2*x*log(F) + b*c*d*log(F))^3*b^2*c^2*d^2*g
amma(3/2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(
F)^2/((b*d^2*log(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b
*d^2*log(F)))^(3/2)) - (b*d^2*x*log(F) + b*c*d*log(F))^5*gamma(5/
2, -(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log
(F))^(9/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(5
/2)))*F^(b*c^2 + a)*f^4/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt
```

```
(pi)*F^(b*c^2 + a)*e^4*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(
-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.257181, size = 460, normalized size = 1.18

$$\frac{\sqrt{\pi}\left(3\,df^4 + 4\left(b^2d^5e^4 - 4\,b^2cd^4e^3f + 6\,b^2c^2d^3e^2f^2 - 4\,b^2c^3d^2ef^3 + b^2c^4df^4\right)\log(F)^2 - 12\left(bd^3e^2f^2 - 2\,bcd^2ef^3 + bc^2df^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^4*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(pi)*(3*d*f^4 + 4*(b^2*d^5*e^4 - 4*b^2*c*d^4*e^3*f + 6*b
^2*c^2*d^3*e^2*f^2 - 4*b^2*c^3*d^2*e*f^3 + b^2*c^4*d*f^4)*log(F)^
2 - 12*(b*d^3*e^2*f^2 - 2*b*c*d^2*e*f^3 + b*c^2*d*f^4)*log(F))*F^
a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) - 2*(3*d*f^4*x + 8*d*e*f^3
 - 5*c*f^4 - 2*(b*d^3*f^4*x^3 + 4*b*d^3*e^3*f - 6*b*c*d^2*e^2*f^2
 + 4*b*c^2*d*e*f^3 - b*c^3*f^4 + (4*b*d^3*e*f^3 - b*c*d^2*f^4)*x^
2 + (6*b*d^3*e^2*f^2 - 4*b*c*d^2*e*f^3 + b*c^2*d*f^4)*x)*log(F))*
sqrt(-b*d^2*log(F))*F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a))/(sqrt(
-b*d^2*log(F))*b^2*d^5*log(F)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.248363, size = 872, normalized size = 2.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^4*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F) + 4)/(s
qrt(-b*ln(F))*d) + 2*(sqrt(pi)*c*f*erf(-sqrt(-b*ln(F))*d*(x + c/d
))*e^(a*ln(F) + 3)/(sqrt(-b*ln(F))*d) + f*e^(b*d^2*x^2*ln(F) + 2*
b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F) + 3)/(b*d*ln(F)))/d - 3/2*(
sqrt(pi)*(2*b*c^2*f^2*ln(F) - f^2)*erf(-sqrt(-b*ln(F))*d*(x + c/d
))*e^(a*ln(F) + 2)/(sqrt(-b*ln(F))*b*d*ln(F)) - 2*(d*f^2*(x + c/d
) - 2*c*f^2)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F) +
 a*ln(F) + 2)/(b*d*ln(F)))/d^2 + (sqrt(pi)*(2*b*c^3*f^3*ln(F) - 3
*c*f^3)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F) + 1)/(sqrt(-b
*ln(F))*b*d*ln(F)) + 2*(b*d^2*f^3*(x + c/d)^2*ln(F) - 3*b*c*d*f^3
*(x + c/d)*ln(F) + 3*b*c^2*f^3*ln(F) - f^3)*e^(b*d^2*x^2*ln(F) +
2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F) + 1)/(b^2*d*ln(F)^2))/d^3
 - 1/8*(sqrt(pi)*(4*b^2*c^4*f^4*ln(F)^2 - 12*b*c^2*f^4*ln(F) + 3*
f^4)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqrt(-b*ln(F))
*b^2*d*ln(F)^2) - 2*(2*b*d^3*f^4*(x + c/d)^3*ln(F) - 8*b*c*d^2*f^
4*(x + c/d)^2*ln(F) + 12*b*c^2*d*f^4*(x + c/d)*ln(F) - 8*b*c^3*f^
4*ln(F) - 3*d*f^4*(x + c/d) + 8*c*f^4)*e^(b*d^2*x^2*ln(F) + 2*b*c
*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b^2*d*ln(F)^2))/d^4
```

3.384 $\int F^{a+b(c+dx)^2}(e+fx)^3\,dx$

Optimal. Leaf size=258

$$-\frac{3\sqrt{\pi}f^2F^a(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d^4\log^{\frac{3}{2}}(F)}-\frac{f^3F^{a+b(c+dx)^2}}{2b^2d^4\log^2(F)}+\frac{\sqrt{\pi}F^a(de-cf)^3\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^4\sqrt{\log(F)}}+\frac{3f^2(c+dx)(de-cf)F^{a+b(c+dx)^2}}{2bd^4\log(F)}+\frac{3f(de-cf)^2F^{a+b(c+dx)^2}}{2bd^4\log(F)}+\frac{f^3(c+dx)^2F^{a+b(c+dx)^2}}{2bd^4\log(F)}$$

```
[Out] -(f^3*F^(a + b*(c + d*x)^2))/(2*b^2*d^4*Log[F]^2) - (3*f^2*(d*e -
 c*f)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/
2)*d^4*Log[F]^(3/2)) + (3*f*(d*e - c*f)^2*F^(a + b*(c + d*x)^2))/
(2*b*d^4*Log[F]) + (3*f^2*(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c +
d*x))/(2*b*d^4*Log[F]) + (f^3*F^(a + b*(c + d*x)^2)*(c + d*x)^2)/
(2*b*d^4*Log[F]) + ((d*e - c*f)^3*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c +
d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d^4*Sqrt[Log[F]])
```

Rubi [A] time = 0.712696, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.19$

$$-\frac{3\sqrt{\pi}f^2F^a(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d^4\log^{\frac{3}{2}}(F)}-\frac{f^3F^{a+b(c+dx)^2}}{2b^2d^4\log^2(F)}+\frac{\sqrt{\pi}F^a(de-cf)^3\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^4\sqrt{\log(F)}}+\frac{3f^2(c+dx)(de-cf)F^{a+b(c+dx)^2}}{2bd^4\log(F)}+\frac{3f(de-cf)^2F^{a+b(c+dx)^2}}{2bd^4\log(F)}+\frac{f^3(c+dx)^2F^{a+b(c+dx)^2}}{2bd^4\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(e + f*x)^3,x]
```


```
[Out] -(f^3*F^(a + b*(c + d*x)^2))/(2*b^2*d^4*Log[F]^2) - (3*f^2*(d*e -
 c*f)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/
2)*d^4*Log[F]^(3/2)) + (3*f*(d*e - c*f)^2*F^(a + b*(c + d*x)^2))/
(2*b*d^4*Log[F]) + (3*f^2*(d*e - c*f)*F^(a + b*(c + d*x)^2)*(c +
d*x))/(2*b*d^4*Log[F]) + (f^3*F^(a + b*(c + d*x)^2)*(c + d*x)^2)/
(2*b*d^4*Log[F]) + ((d*e - c*f)^3*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c +
d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d^4*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 60.9533, size = 241, normalized size = 0.93

$$-\frac{\sqrt{\pi}F^a\left(cf-de\right)^3\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2\sqrt{b}d^4\sqrt{\log\left(F\right)}}+\frac{3\sqrt{\pi}F^af^2\left(cf-de\right)\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{4b^{\frac{3}{2}}d^4\log\left(F\right)^{\frac{3}{2}}}+\frac{F^{a+b(c+dx)^2}f^3\left(c+dx\right)^2}{2bd^4\log\left(F\right)}-\frac{3F^{a+b(c+dx)^2}f^2\left(c+dx\right)\left(cf-de\right)}{2bd^4\log\left(F\right)}+\frac{3F^{a+b(c+dx)^2}f\left(cf-de\right)^2}{2bd^4\log\left(F\right)}-\frac{F^{a+b(c+dx)^2}f^3}{2b^2d^4\log\left(F\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**3,x)
```

```
[Out] -sqrt(pi)*F**a*(c*f - d*e)**3*erfi(sqrt(b)*(c + d*x)*sqrt(log(F))
)/(2*sqrt(b)*d**4*sqrt(log(F))) + 3*sqrt(pi)*F**a*f**2*(c*f - d*e
)*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(4*b**(3/2)*d**4*log(F)**(
3/2)) + F**(a + b*(c + d*x)**2)*f**3*(c + d*x)**2/(2*b*d**4*log(F
)) - 3*F**(a + b*(c + d*x)**2)*f**2*(c + d*x)*(c*f - d*e)/(2*b*d*
*4*log(F)) + 3*F**(a + b*(c + d*x)**2)*f*(c*f - d*e)**2/(2*b*d**4
*log(F)) - F**(a + b*(c + d*x)**2)*f**3/(2*b**2*d**4*log(F)**2)
```

Mathematica [A] time = 0.303604, size = 148, normalized size = 0.57

$$\frac{F^a\left(2fF^{b(c+dx)^2}\left(b\log(F)\left(c^2f^2-cdf(3e+fx)+d^2\left(3e^2+3efx+f^2x^2\right)\right)-f^2\right)+\sqrt{\pi}\sqrt{b}\sqrt{\log(F)}(de-cf)\left(2b\log(F)(de-\right.\right.}{4b^2d^4\log^2(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(e + f*x)^3,x]
```

```
[Out] (F^a*(Sqrt[b]*(d*e - c*f)*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Lo
g[F]]]*Sqrt[Log[F]]*(-3*f^2 + 2*b*(d*e - c*f)^2*Log[F]) + 2*f*F^(
b*(c + d*x)^2)*(-f^2 + b*(c^2*f^2 - c*d*f*(3*e + f*x) + d^2*(3*e^
2 + 3*e*f*x + f^2*x^2))*Log[F])))/(4*b^2*d^4*Log[F]^2)
```

Maple [B] time = 0.053, size = 582, normalized size = 2.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(f*x+e)^3,x)
```

```
[Out] -1/2*e^3*Pi^(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*
x+b*c*ln(F)/(-b*ln(F))^(1/2))+1/2*f^3/ln(F)/b/d^2*x^2*F^(b*d^2*x^
2+2*b*c*d*x+b*c^2+a)-1/2*f^3*c/d^3/ln(F)/b*x*F^(b*d^2*x^2+2*b*c*d
*x+b*c^2+a)+1/2*f^3*c^2/d^4/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+
a)+1/2*f^3*c^3/d^4*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F)
)^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))-3/4*f^3*c/d^4/ln(F)/b*Pi^(1
/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*
ln(F))^(1/2))-1/2*f^3/ln(F)^2/b^2/d^4*F^(b*d^2*x^2+2*b*c*d*x+b*c^
2+a)+3/2*e*f^2/ln(F)/b/d^2*x*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3/2*
e*f^2*c/d^3/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)-3/2*e*f^2*c^2
/d^3*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*
ln(F)/(-b*ln(F))^(1/2))+3/4*e*f^2/ln(F)/b/d^3*Pi^(1/2)*F^a/(-b*ln
(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+
3/2*e^2*f/ln(F)/b/d^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+3/2*e^2*f*c
/d^2*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*
ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 0.965483, size = 1160, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^3*F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] -3/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*e^2*f/(sqrt(b*d
^2*log(F))*F^(b*c^2)) + 3/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log
(F))*b^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*
d^2*log(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*
log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2
*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F
))^(5/2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x
*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(
-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c
^2 + a)*e*f^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) - 1/2*(sqrt(pi)*(b*d
^2*x*log(F) + b*c*d*log(F))*b^3*c^3*d^3*(erf(sqrt(-(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)^3/((b*d^2*log(F)
)^(7/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F))))
- 3*b^3*c^2*d^4*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F
)))*log(F)^3/(b*d^2*log(F))^(7/2) + b^2*d^4*gamma(2, -(b*d^2*x*lo
g(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(7
/2) - 3*(b*d^2*x*log(F) + b*c*d*log(F))^3*b*c*d*gamma(3/2, -(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)/((b*d^2*log(F
))^(7/2)*(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2
)))*F^(b*c^2 + a)*f^3/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt(p
i)*F^(b*c^2 + a)*e^3*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(-b
*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.288504, size = 315, normalized size = 1.22

$$\frac{\sqrt{\pi}\left(2\left(b^2d^4e^3 - 3\,b^2cd^3e^2f + 3\,b^2c^2d^2ef^2 - b^2c^3df^3\right)\log\left(F\right)^2 - 3\left(bd^2ef^2 - bcdf^3\right)\log\left(F\right)\right)F^a\operatorname{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right) - 2}{4\sqrt{-bd^2\log\left(F\right)}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^3*F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/4*(sqrt(pi)*(2*(b^2*d^4*e^3 - 3*b^2*c*d^3*e^2*f + 3*b^2*c^2*d^2
*e*f^2 - b^2*c^3*d*f^3)*log(F)^2 - 3*(b*d^2*e*f^2 - b*c*d*f^3)*lo
g(F))*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) - 2*sqrt(-b*d^2*lo
g(F))*(f^3 - (b*d^2*f^3*x^2 + 3*b*d^2*e^2*f - 3*b*c*d*e*f^2 + b*c
^2*f^3 + (3*b*d^2*e*f^2 - b*c*d*f^3)*x)*log(F))*F^(b*d^2*x^2 + 2*
b*c*d*x + b*c^2 + a))/(sqrt(-b*d^2*log(F))*b^2*d^4*log(F)^2)
```

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

$$\int F^{a+b(c+dx)^2}\left(e+fx\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**3,x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)*(e + f*x)**3, x)
```

GIAC/XCAS [A] time = 0.248633, size = 578, normalized size = 2.24

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln\left(F\right)+3\right)}}{2\sqrt{-b\ln\left(F\right)}d}+\frac{3\left(\frac{\sqrt{\pi}cf\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{(a\ln(F)+2)}}{\sqrt{-b\ln(F)}d}+\frac{fe^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)+2\right)}}{bd\ln(F)}\right)}{2\,d}-\frac{3\left(\frac{\sqrt{\pi}\left(2\,bc^2f^2\ln(F)-f^2\right)\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{(a\ln(F)+1)}}{\sqrt{-b\ln(F)}bd\ln(F)}-\frac{2\left(df^2\left(x+\frac{c}{d}\right)-2\,cf^2\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)+1\right)}}{bd\ln(F)}\right)}{4\,d^2}+\frac{\frac{\sqrt{\pi}\left(2\,bc^3f^3\ln(F)-3\,cf^3\right)\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{(a\ln(F))}}{\sqrt{-b\ln(F)}bd\ln(F)}+\frac{2\left(bd^2f^3\left(x+\frac{c}{d}\right)^2\ln(F)-3\,bcdf^3\left(x+\frac{c}{d}\right)\ln(F)+3\,bc^2f^3\ln(F)-f^3\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F\right.}}{b^2d\ln(F)^2}}{4\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((f*x + e)^3*F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F) + 3)/(s
qrt(-b*ln(F))*d) + 3/2*(sqrt(pi)*c*f*erf(-sqrt(-b*ln(F))*d*(x + c
/d))*e^(a*ln(F) + 2)/(sqrt(-b*ln(F))*d) + f*e^(b*d^2*x^2*ln(F) +
2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F) + 2)/(b*d*ln(F)))/d - 3/4
*(sqrt(pi)*(2*b*c^2*f^2*ln(F) - f^2)*erf(-sqrt(-b*ln(F))*d*(x + c
/d))*e^(a*ln(F) + 1)/(sqrt(-b*ln(F))*b*d*ln(F)) - 2*(d*f^2*(x + c
/d) - 2*c*f^2)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F)
 + a*ln(F) + 1)/(b*d*ln(F)))/d^2 + 1/4*(sqrt(pi)*(2*b*c^3*f^3*ln(
F) - 3*c*f^3)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqrt(
-b*ln(F))*b*d*ln(F)) + 2*(b*d^2*f^3*(x + c/d)^2*ln(F) - 3*b*c*d*f
^3*(x + c/d)*ln(F) + 3*b*c^2*f^3*ln(F) - f^3)*e^(b*d^2*x^2*ln(F)
+ 2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b^2*d*ln(F)^2))/d^3
```

3.385 $\int F^{a+b(c+dx)^2}(e+fx)^2\,dx$

Optimal. Leaf size=170

$$-\frac{\sqrt{\pi}f^2F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d^3\log^{\frac{3}{2}}(F)}+\frac{\sqrt{\pi}F^a(de-cf)^2\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^3\sqrt{\log(F)}}+\frac{f(de-cf)F^{a+b(c+dx)^2}}{bd^3\log(F)}+\frac{f^2(c+dx)F^{a+b(c+dx)^2}}{2bd^3\log(F)}$$

```
[Out] -(f^2*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/
2)*d^3*Log[F]^(3/2)) + (f*(d*e - c*f)*F^(a + b*(c + d*x)^2))/(b*d
^3*Log[F]) + (f^2*F^(a + b*(c + d*x)^2)*(c + d*x))/(2*b*d^3*Log[F
]) + ((d*e - c*f)^2*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[
F]]])/(2*Sqrt[b]*d^3*Sqrt[Log[F]])
```

Rubi [A] time = 0.445026, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19

$$-\frac{\sqrt{\pi}f^2F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{4b^{3/2}d^3\log^{\frac{3}{2}}(F)}+\frac{\sqrt{\pi}F^a(de-cf)^2\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^3\sqrt{\log(F)}}+\frac{f(de-cf)F^{a+b(c+dx)^2}}{bd^3\log(F)}+\frac{f^2(c+dx)F^{a+b(c+dx)^2}}{2bd^3\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(e + f*x)^2,x]
```

```
[Out] -(f^2*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(4*b^(3/
2)*d^3*Log[F]^(3/2)) + (f*(d*e - c*f)*F^(a + b*(c + d*x)^2))/(b*d
^3*Log[F]) + (f^2*F^(a + b*(c + d*x)^2)*(c + d*x))/(2*b*d^3*Log[F
]) + ((d*e - c*f)^2*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[
F]]])/(2*Sqrt[b]*d^3*Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 36.8118, size = 158, normalized size = 0.93

$$\frac{\sqrt{\pi}F^a\left(cf-de\right)^2\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2\sqrt{b}d^3\sqrt{\log\left(F\right)}}-\frac{\sqrt{\pi}F^af^2\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{4b^{\frac{3}{2}}d^3\log\left(F\right)^{\frac{3}{2}}}+\frac{F^{a+b(c+dx)^2}f^2\left(c+dx\right)}{2bd^3\log\left(F\right)}-\frac{F^{a+b(c+dx)^2}f\left(cf-de\right)}{bd^3\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**2,x)
```

```
[Out] sqrt(pi)*F**a*(c*f - d*e)**2*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))
/(2*sqrt(b)*d**3*sqrt(log(F))) - sqrt(pi)*F**a*f**2*erfi(sqrt(b)*
(c + d*x)*sqrt(log(F)))/(4*b**(3/2)*d**3*log(F)**(3/2)) + F**(a +
 b*(c + d*x)**2)*f**2*(c + d*x)/(2*b*d**3*log(F)) - F**(a + b*(c
+ d*x)**2)*f*(c*f - d*e)/(b*d**3*log(F))
```

Mathematica [A] time = 0.20911, size = 105, normalized size = 0.62

$$\frac{F^a\left(\sqrt{\pi}\left(2b\log(F)(de-cf)^2-f^2\right)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)+2\sqrt{b}f\sqrt{\log(F)}F^{b(c+dx)^2}(-cf+2de+dfx)\right)}{4b^{3/2}d^3\log^{\frac{3}{2}}(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(e + f*x)^2,x]
```

```
[Out] (F^a*(2*Sqrt[b]*f*F^(b*(c + d*x)^2)*(2*d*e - c*f + d*f*x)*Sqrt[Lo
g[F]] + Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*(-f^2 + 2*b
*(d*e - c*f)^2*Log[F])))/(4*b^(3/2)*d^3*Log[F]^(3/2))
```

Maple [B] time = 0.043, size = 309, normalized size = 1.8

$$-\frac{F^a\sqrt{\pi}e^2}{2\,d}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}+\frac{f^2xF^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,\ln(F)\,bd^2}-\frac{cf^2F^{bd^2x^2+2\,bcdx+bc^2+a}}{2\,\ln(F)\,bd^3}-\frac{f^2c^2\sqrt{\pi}F^a}{2\,d^3}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}+\frac{f^2\sqrt{\pi}F^a}{4\,\ln(F)\,bd^3}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}+\frac{efF^{bd^2x^2+2\,bcdx+bc^2+a}}{\ln(F)\,bd^2}+\frac{efc\sqrt{\pi}F^a}{d^2}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)*(f*x+e)^2,x)
```

```
[Out] -1/2*e^2*Pi^(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*
x+b*c*ln(F)/(-b*ln(F))^(1/2))+1/2*f^2/ln(F)/b/d^2*x*F^(b*d^2*x^2+
2*b*c*d*x+b*c^2+a)-1/2*f^2*c/d^3/ln(F)/b*F^(b*d^2*x^2+2*b*c*d*x+b
*c^2+a)-1/2*f^2*c^2/d^3*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*
ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))+1/4*f^2/ln(F)/b/d^3*Pi
^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*c*ln(F)/(
-b*ln(F))^(1/2))+e*f/ln(F)/b/d^2*F^(b*d^2*x^2+2*b*c*d*x+b*c^2+a)+
e*f*c/d^2*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x
+b*c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 0.891009, size = 699, normalized size = 4.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b*d^2
*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log
(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)
))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*e*f/(sqrt(b*d^2*log
(F))*F^(b*c^2)) + 1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b
^2*c^2*d^2*(erf(sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))) - 1)*log(F)^2/((b*d^2*log(F))^(5/2)*sqrt(-(b*d^2*x*log(F)
 + b*c*d*log(F))^2/(b*d^2*log(F)))) - 2*b^2*c*d^3*e^((b*d^2*x*log
(F) + b*c*d*log(F))^2/(b*d^2*log(F)))*log(F)^2/(b*d^2*log(F))^(5/
2) - (b*d^2*x*log(F) + b*c*d*log(F))^3*gamma(3/2, -(b*d^2*x*log(F
) + b*c*d*log(F))^2/(b*d^2*log(F)))/((b*d^2*log(F))^(5/2)*(-(b*d^
2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))^(3/2)))*F^(b*c^2 + a
)*f^2/(sqrt(b*d^2*log(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)
*e^2*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(
-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.267031, size = 189, normalized size = 1.11

$$-\frac{\sqrt{\pi}\left(df^2-2\left(bd^3e^2-2\,bcd^2ef+bc^2df^2\right)\log\left(F\right)\right)F^a\,\mathrm{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right)-2\left(df^2x+2\,def-cf^2\right)\sqrt{-bd^2\log\left(F\right)}F^{bd^2}}{4\sqrt{-bd^2\log\left(F\right)}bd^3\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(sqrt(pi)*(d*f^2 - 2*(b*d^3*e^2 - 2*b*c*d^2*e*f + b*c^2*d*f^
2)*log(F))*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d) - 2*(d*f^2*x
+ 2*d*e*f - c*f^2)*sqrt(-b*d^2*log(F))*F^(b*d^2*x^2 + 2*b*c*d*x +
 b*c^2 + a))/(sqrt(-b*d^2*log(F))*b*d^3*log(F))
```

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

$$\int F^{a+b(c+dx)^2}\left(e+fx\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(f*x+e)**2,x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)*(e + f*x)**2, x)
```

GIAC/XCAS [A] time = 0.24937, size = 351, normalized size = 2.06

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)+2\right)}}{2\sqrt{-b\ln\left(F\right)}d}+\frac{\frac{\sqrt{\pi}cf\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)+1\right)}}{\sqrt{-b\ln(F)}d}+\frac{fe^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)+1\right)}}{bd\ln(F)}}{d}-\frac{\frac{\sqrt{\pi}\left(2\,bc^2f^2\ln(F)-f^2\right)\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{\sqrt{-b\ln(F)}bd\ln(F)}-\frac{2\left(df^2\left(x+\frac{c}{d}\right)-2\,cf^2\right)e^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{bd\ln(F)}}{4\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F) + 2)/(s
qrt(-b*ln(F))*d) + (sqrt(pi)*c*f*erf(-sqrt(-b*ln(F))*d*(x + c/d))
*e^(a*ln(F) + 1)/(sqrt(-b*ln(F))*d) + f*e^(b*d^2*x^2*ln(F) + 2*b*
c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F) + 1)/(b*d*ln(F)))/d - 1/4*(sq
rt(pi)*(2*b*c^2*f^2*ln(F) - f^2)*erf(-sqrt(-b*ln(F))*d*(x + c/d))
*e^(a*ln(F))/(sqrt(-b*ln(F))*b*d*ln(F)) - 2*(d*f^2*(x + c/d) - 2*
c*f^2)*e^(b*d^2*x^2*ln(F) + 2*b*c*d*x*ln(F) + b*c^2*ln(F) + a*ln(
F))/(b*d*ln(F)))/d^2
```

3.386 $\int F^{a+b(c+dx)^2}(e+fx)\,dx$

Optimal. Leaf size=81

$$\frac{\sqrt{\pi}F^a(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^2\sqrt{\log(F)}}+\frac{fF^{a+b(c+dx)^2}}{2bd^2\log(F)}$$

```
[Out] (f*F^(a + b*(c + d*x)^2))/(2*b*d^2*Log[F]) + ((d*e - c*f)*F^a*Sqr
t[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d^2*Sqrt[L
og[F]])
```

Rubi [A] time = 0.197395, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{\sqrt{\pi}F^a(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d^2\sqrt{\log(F)}}+\frac{fF^{a+b(c+dx)^2}}{2bd^2\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2)*(e + f*x),x]
```

```
[Out] (f*F^(a + b*(c + d*x)^2))/(2*b*d^2*Log[F]) + ((d*e - c*f)*F^a*Sqr
t[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d^2*Sqrt[L
og[F]])
```

Rubi in Sympy [A] time = 15.0032, size = 73, normalized size = 0.9

$$-\frac{\sqrt{\pi}F^a\left(cf-de\right)\text{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{2\sqrt{b}d^2\sqrt{\log\left(F\right)}}+\frac{F^{a+b(c+dx)^2}f}{2bd^2\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)*(f*x+e),x)
```

```
[Out] -sqrt(pi)*F**a*(c*f - d*e)*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(
2*sqrt(b)*d**2*sqrt(log(F))) + F**(a + b*(c + d*x)**2)*f/(2*b*d**
2*log(F))
```

Mathematica [A] time = 0.0968409, size = 74, normalized size = 0.91

$$\frac{F^a\left(\sqrt{\pi}\sqrt{b}\sqrt{\log(F)}(de-cf)\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)+fF^{b(c+dx)^2}\right)}{2bd^2\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)*(e + f*x),x]
```

```
[Out] (F^a*(f*F^(b*(c + d*x)^2) + Sqrt[b]*(d*e - c*f)*Sqrt[Pi]*Erfi[Sqr
t[b]*(c + d*x)*Sqrt[Log[F]]]*Sqrt[Log[F]]))/(2*b*d^2*Log[F])
```

Maple [A] time = 0.034, size = 127, normalized size = 1.6

$$-\frac{F^{a}\sqrt{\pi}e}{2d}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}+\frac{F^{bd^{2}x^{2}+2\,bcdx+bc^{2}+a}f}{2\ln(F)\,bd^{2}}+\frac{cf\sqrt{\pi}F^{a}}{2\,d^{2}}Erf\left(-d\sqrt{-b\ln(F)}x+cb\ln(F)\frac{1}{\sqrt{-b\ln(F)}}\right)\frac{1}{\sqrt{-b\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^(a+b*(d*x+c)^2)*(f*x+e),x)
```

```
[Out] -1/2*e*Pi^(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+
b*c*ln(F)/(-b*ln(F))^(1/2))+1/2*f/ln(F)/b/d^2*F^(b*d^2*x^2+2*b*c*
d*x+b*c^2+a)+1/2*f*c/d^2*Pi^(1/2)*F^a/(-b*ln(F))^(1/2)*erf(-d*(-b
*ln(F))^(1/2)*x+b*c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 0.822991, size = 317, normalized size = 3.91

$$-\frac{\left(\frac{\sqrt{\pi}\left(bd^{2}x\log(F)+bcd\log(F)\right)bcd\left(\operatorname{erf}\left(\sqrt{-\frac{\left(bd^{2}x\log(F)+bcd\log(F)\right)^{2}}{bd^{2}\log(F)}}\right)-1\right)\log(F)}{\left(bd^{2}\log(F)\right)^{\frac{3}{2}}\sqrt{-\frac{\left(bd^{2}x\log(F)+bcd\log(F)\right)^{2}}{bd^{2}\log(F)}}}-\frac{bd^{2}e^{\left(\frac{\left(bd^{2}x\log(F)+bcd\log(F)\right)^{2}}{bd^{2}\log(F)}\right)}\log(F)}{\left(bd^{2}\log(F)\right)^{\frac{3}{2}}}\right)F^{bc^{2}+a}f}{2\sqrt{bd^{2}\log(F)}F^{bc^{2}}}+\frac{\sqrt{\pi}F^{bc^{2}+a}e\operatorname{erf}\left(\sqrt{-b\log(F)}dx-\frac{bc\log(F)}{\sqrt{-b\log(F)}}\right)}{2\sqrt{-b\log(F)}F^{bc^{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(sqrt(pi)*(b*d^2*x*log(F) + b*c*d*log(F))*b*c*d*(erf(sqrt(-(
b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*log(F)))) - 1)*log(F)/((b
*d^2*log(F))^(3/2)*sqrt(-(b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2
*log(F)))) - b*d^2*e^((b*d^2*x*log(F) + b*c*d*log(F))^2/(b*d^2*lo
g(F)))*log(F)/(b*d^2*log(F))^(3/2))*F^(b*c^2 + a)*f/(sqrt(b*d^2*l
og(F))*F^(b*c^2)) + 1/2*sqrt(pi)*F^(b*c^2 + a)*e*erf(sqrt(-b*log(
F))*d*x - b*c*log(F)/sqrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*
d)
```

Fricas [A] time = 0.259912, size = 135, normalized size = 1.67

$$\frac{\sqrt{\pi}\left(bd^{2}e-bcdf\right)F^{a}\operatorname{erf}\left(\frac{\sqrt{-bd^{2}\log(F)}(dx+c)}{d}\right)\log(F)+\sqrt{-bd^{2}\log(F)}F^{bd^{2}x^{2}+2\,bcdx+bc^{2}+a}f}{2\sqrt{-bd^{2}\log(F)}bd^{2}\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(sqrt(pi)*(b*d^2*e - b*c*d*f)*F^a*erf(sqrt(-b*d^2*log(F))*(d*
x + c)/d)*log(F) + sqrt(-b*d^2*log(F))*F^(b*d^2*x^2 + 2*b*c*d*x +
 b*c^2 + a)*f)/(sqrt(-b*d^2*log(F))*b*d^2*log(F))
```

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

$$\int F^{a+b(c+dx)^2}(e+fx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)*(f*x+e),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)*(e + f*x), x)
```

GIAC/XCAS [A] time = 0.254743, size = 174, normalized size = 2.15

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln\left(F\right)+1\right)}}{2\sqrt{-b\ln\left(F\right)}d}+\frac{\frac{\sqrt{\pi}cf\,\mathrm{erf}\left(-\sqrt{-b\ln(F)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{\sqrt{-b\ln(F)}d}+\frac{fe^{\left(bd^2x^2\ln(F)+2\,bcdx\ln(F)+bc^2\ln(F)+a\ln(F)\right)}}{bd\ln(F)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F) + 1)/(s
qrt(-b*ln(F))*d) + 1/2*(sqrt(pi)*c*f*erf(-sqrt(-b*ln(F))*d*(x + c
/d))*e^(a*ln(F))/(sqrt(-b*ln(F))*d) + f*e^(b*d^2*x^2*ln(F) + 2*b*
c*d*x*ln(F) + b*c^2*ln(F) + a*ln(F))/(b*d*ln(F)))/d
```

3.387 $\int F^{a+b(c+dx)^2}\,dx$

Optimal. Leaf size=44

$$\frac{\sqrt{\pi}F^a\mathrm{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d*
Sqrt[Log[F]])
```

Rubi [A] time = 0.0238733, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{\sqrt{\pi}F^a\mathrm{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*(c + d*x)^2),x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d*
Sqrt[Log[F]])
```

Rubi in Sympy [A] time = 2.68468, size = 41, normalized size = 0.93

$$\frac{\sqrt{\pi}F^a\,\mathrm{erfi}\left(\sqrt{b}\,(c+dx)\,\sqrt{\log{(F)}}\right)}{2\sqrt{b}d\sqrt{\log{(F)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2),x)
```

```
[Out] sqrt(pi)*F**a*erfi(sqrt(b)*(c + d*x)*sqrt(log(F)))/(2*sqrt(b)*d*s
qrt(log(F)))
```

Mathematica [A] time = 0.00765015, size = 44, normalized size = 1.

$$\frac{\sqrt{\pi}F^a\mathrm{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{2\sqrt{b}d\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*(c + d*x)^2),x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]])/(2*Sqrt[b]*d*
Sqrt[Log[F]])
```

Maple [A] time = 0.002, size = 44, normalized size = 1.

$$-\frac{\sqrt{\pi}F^a}{2\,d}Erf\left(-d\sqrt{-b\ln{(F)}}x+cb\ln{(F)}\frac{1}{\sqrt{-b\ln{(F)}}}\right)\frac{1}{\sqrt{-b\ln{(F)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2),x)
```

```
[Out] -1/2*Pi^(1/2)*F^a/d/(-b*ln(F))^(1/2)*erf(-d*(-b*ln(F))^(1/2)*x+b*
c*ln(F)/(-b*ln(F))^(1/2))
```

Maxima [A] time = 0.781463, size = 78, normalized size = 1.77

$$\frac{\sqrt{\pi}F^{bc^2+a}\operatorname{erf}\left(\sqrt{-b\log\left(F\right)}dx - \frac{bc\log(F)}{\sqrt{-b\log(F)}}\right)}{2\sqrt{-b\log\left(F\right)}F^{bc^2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*c^2 + a)*erf(sqrt(-b*log(F))*d*x - b*c*log(F)/s
qrt(-b*log(F)))/(sqrt(-b*log(F))*F^(b*c^2)*d)
```

Fricas [A] time = 0.269733, size = 51, normalized size = 1.16

$$\frac{\sqrt{\pi}F^a\operatorname{erf}\left(\frac{\sqrt{-bd^2\log(F)}(dx+c)}{d}\right)}{2\sqrt{-bd^2\log\left(F\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*F^a*erf(sqrt(-b*d^2*log(F))*(d*x + c)/d)/sqrt(-b*d^2
*log(F))
```

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

$$\int F^{a+b(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2),x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2), x)
```

GIAC/XCAS [A] time = 0.259497, size = 51, normalized size = 1.16

$$-\frac{\sqrt{\pi}\operatorname{erf}\left(-\sqrt{-b\ln\left(F\right)}d\left(x+\frac{c}{d}\right)\right)e^{\left(a\ln(F)\right)}}{2\sqrt{-b\ln\left(F\right)}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*d*(x + c/d))*e^(a*ln(F))/(sqrt(
-b*ln(F))*d)
```

3.388 $\int \frac{F^{a+b(c+dx)^2}}{e+fx}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{F^{a+b(c+dx)^2}}{e+fx},x\right)$$

```
[Out] Unintegrable[F^(a + b*(c + d*x)^2)/(e + f*x), x]
```

Rubi [A] time = 0.0981932, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{F^{a+b(c+dx)^2}}{e+fx},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(e + f*x),x]

[Out] Defer[Int][F^(a + b*(c + d*x)^2)/(e + f*x), x]
```

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

$$\int \frac{F^{a+b(c+dx)^2}}{e+fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(f*x+e),x)

[Out] Integral(F**(a + b*(c + d*x)**2)/(e + f*x), x)
```

Mathematica [A] time = 0.336966, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(c+dx)^2}}{e+fx}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(e + f*x),x]

[Out] Integrate[F^(a + b*(c + d*x)^2)/(e + f*x), x]
```

Maple [A] time = 0.049, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^2}}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(f*x+e),x)

[Out] int(F^(a+b*(d*x+c)^2)/(f*x+e),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e),x, algorithm="maxima")

[Out] integrate(F^((d*x + c)^2*b + a)/(f*x + e), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{fx+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e),x, algorithm="fricas")

[Out] integral(F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(f*x + e), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b(c+dx)^2}}{e+fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(f*x+e),x)

[Out] Integral(F**(a + b*(c + d*x)**2)/(e + f*x), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e),x, algorithm="giac")

[Out] integrate(F^((d*x + c)^2*b + a)/(f*x + e), x)
```

3.389 $\int \frac{F^{a+b(c+dx)^2}}{(e+fx)^2}\,dx$

Optimal. Leaf size=109

$$-\frac{2bd\log(F)(de-cf)\text{Int}\left(\frac{F^{a+b(c+dx)^2}}{e+fx},x\right)}{f^2}-\frac{F^{a+b(c+dx)^2}}{f(e+fx)}+\frac{\sqrt{\pi}\sqrt{b}dF^a\sqrt{\log(F)}\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{f^2}$$

```
[Out] -(F^(a + b*(c + d*x)^2)/(f*(e + f*x))) + (Sqrt[b]*d*F^a*Sqrt[Pi]*
Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Sqrt[Log[F]])/f^2 - (2*b*d*(
d*e - c*f)*Log[F]*Unintegrable[F^(a + b*(c + d*x)^2)/(e + f*x), x
])/f^2
```

Rubi [A] time = 0.249194, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{F^{a+b(c+dx)^2}}{(e+fx)^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(e + f*x)^2,x]
```

```
[Out] -(F^(a + b*(c + d*x)^2)/(f*(e + f*x))) + (Sqrt[b]*d*F^a*Sqrt[Pi]*
Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Sqrt[Log[F]])/f^2 - (2*b*d*(
d*e - c*f)*Log[F]*Defer[Int][F^(a + b*(c + d*x)^2)/(e + f*x), x])
/f^2
```

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

$$\frac{\sqrt{\pi}F^a\sqrt{b}d\sqrt{\log(F)}\operatorname{erfi}\left(\sqrt{b}(c+dx)\sqrt{\log(F)}\right)}{f^2}-\frac{F^{a+b(c+dx)^2}}{f(e+fx)}+\frac{2bd(cf-de)\log(F)\int\frac{F^{a+b(c+dx)^2}}{e+fx}\,dx}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(f*x+e)**2,x)
```

```
[Out] sqrt(pi)*F**a*sqrt(b)*d*sqrt(log(F))*erfi(sqrt(b)*(c + d*x)*sqrt(
log(F)))/f**2 - F**(a + b*(c + d*x)**2)/(f*(e + f*x)) + 2*b*d*(c*
f - d*e)*log(F)*Integral(F**(a + b*(c + d*x)**2)/(e + f*x), x)/f*
*2
```

Mathematica [A] time = 0.939131, size = 0, normalized size = 0.

$$\int\frac{F^{a+b(c+dx)^2}}{(e+fx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(e + f*x)^2,x]
```

```
[Out] Integrate[F^(a + b*(c + d*x)^2)/(e + f*x)^2, x]
```

Maple [A] time = 0.051, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^2}}{(fx+e)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(f*x+e)^2,x)
```

```
[Out] int(F^(a+b*(d*x+c)^2)/(f*x+e)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(fx+e)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(f*x + e)^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{f^2x^2+2\,efx+e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e)^2,x, algorithm="fricas")
```

```
[Out] integral(F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(f^2*x^2 + 2*e*f*x
 + e^2), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b(c+dx)^2}}{(e+fx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(f*x+e)**2,x)
```

```
[Out] Integral(F**(a + b*(c + d*x)**2)/(e + f*x)**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(fx+e)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e)^2,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(f*x + e)^2, x)
```

3.390 $\int \frac{F^{a+b(c+dx)^2}}{(e+fx)^3}\,dx$

Optimal. Leaf size=200

$$\frac{2b^2d^2\log^2(F)(de-cf)^2\mathrm{Int}\left(\frac{F^{a+b(c+dx)^2}}{e+fx},x\right)}{f^4}+\frac{bd^2\log(F)\mathrm{Int}\left(\frac{F^{a+b(c+dx)^2}}{e+fx},x\right)}{f^2}-\frac{\sqrt{\pi}b^{3/2}d^2F^a\log^{\frac{3}{2}}(F)(de-cf)\mathrm{Erfi}\left(\sqrt{b}\sqrt{\log(F)}(c+dx)\right)}{f^4}+\frac{bd\log(F)(de-cf)F^{a+b(c+dx)^2}}{f^3(e+fx)}-\frac{F^{a+b(c+dx)^2}}{2f(e+fx)^2}$$

```
[Out] -F^(a + b*(c + d*x)^2)/(2*f*(e + f*x)^2) + (b*d*(d*e - c*f)*F^(a
+ b*(c + d*x)^2)*Log[F])/(f^3*(e + f*x)) - (b^(3/2)*d^2*(d*e - c*
f)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Log[F]^(3/2)
)/f^4 + (b*d^2*Log[F]*Unintegrable[F^(a + b*(c + d*x)^2)/(e + f*x
), x])/f^2 + (2*b^2*d^2*(d*e - c*f)^2*Log[F]^2*Unintegrable[F^(a
+ b*(c + d*x)^2)/(e + f*x), x])/f^4
```

Rubi [A] time = 0.5096, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\mathrm{Int}\left(\frac{F^{a+b(c+dx)^2}}{(e+fx)^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[F^(a + b*(c + d*x)^2)/(e + f*x)^3,x]
```

```
[Out] -F^(a + b*(c + d*x)^2)/(2*f*(e + f*x)^2) + (b*d*(d*e - c*f)*F^(a
+ b*(c + d*x)^2)*Log[F])/(f^3*(e + f*x)) - (b^(3/2)*d^2*(d*e - c*
f)*F^a*Sqrt[Pi]*Erfi[Sqrt[b]*(c + d*x)*Sqrt[Log[F]]]*Log[F]^(3/2)
)/f^4 + (b*d^2*Log[F]*Defer[Int][F^(a + b*(c + d*x)^2)/(e + f*x),
 x])/f^2 + (2*b^2*d^2*(d*e - c*f)^2*Log[F]^2*Defer[Int][F^(a + b*
(c + d*x)^2)/(e + f*x), x])/f^4
```

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

$$\frac{\sqrt{\pi}F^ab^{\frac{3}{2}}d^2\left(cf-de\right)\log\left(F\right)^{\frac{3}{2}}\operatorname{erfi}\left(\sqrt{b}\left(c+dx\right)\sqrt{\log\left(F\right)}\right)}{f^4}-\frac{F^{a+b(c+dx)^2}bd\left(cf-de\right)\log\left(F\right)}{f^3\left(e+fx\right)}-\frac{F^{a+b(c+dx)^2}}{2f\left(e+fx\right)^2}+\frac{2b^2d^2\left(cf-de\right)^2\log\left(F\right)^2\int\frac{F^{a+b(c+dx)^2}}{e+fx}\,dx}{f^4}+\frac{bd^2\log\left(F\right)\int\frac{F^{a+b(c+dx)^2}}{e+fx}\,dx}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*(d*x+c)**2)/(f*x+e)**3,x)
```

```
[Out] sqrt(pi)*F**a*b**(3/2)*d**2*(c*f - d*e)*log(F)**(3/2)*erfi(sqrt(b
)*(c + d*x)*sqrt(log(F)))/f**4 - F**(a + b*(c + d*x)**2)*b*d*(c*f
 - d*e)*log(F)/(f**3*(e + f*x)) - F**(a + b*(c + d*x)**2)/(2*f*(e
 + f*x)**2) + 2*b**2*d**2*(c*f - d*e)**2*log(F)**2*Integral(F**(a
 + b*(c + d*x)**2)/(e + f*x), x)/f**4 + b*d**2*log(F)*Integral(F*
*(a + b*(c + d*x)**2)/(e + f*x), x)/f**2
```

Mathematica [A] time = 1.28949, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(c+dx)^2}}{(e+fx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*(c + d*x)^2)/(e + f*x)^3,x]
```

```
[Out] Integrate[F^(a + b*(c + d*x)^2)/(e + f*x)^3, x]
```

Maple [A] time = 0.057, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(dx+c)^2}}{(fx+e)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*(d*x+c)^2)/(f*x+e)^3,x)
```

```
[Out] int(F^(a+b*(d*x+c)^2)/(f*x+e)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(fx+e)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e)^3,x, algorithm="maxima")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(f*x + e)^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{bd^2x^2+2\,bcdx+bc^2+a}}{f^3x^3+3\,ef^2x^2+3\,e^2fx+e^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e)^3,x, algorithm="fricas")
```

```
[Out] integral(F^(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + a)/(f^3*x^3 + 3*e*f^2
*x^2 + 3*e^2*f*x + e^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*(d*x+c)**2)/(f*x+e)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(dx+c)^2b+a}}{(fx+e)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((d*x + c)^2*b + a)/(f*x + e)^3,x, algorithm="giac")
```

```
[Out] integrate(F^((d*x + c)^2*b + a)/(f*x + e)^3, x)
```

3.391 $\int e^{e(c+dx)^3}(a+bx)^3\,dx$

Optimal. Leaf size=177

$$-\frac{b(c+dx)^2(bc-ad)^2\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{d^4\left(-e(c+dx)^3\right)^{2/3}}+\frac{(c+dx)(bc-ad)^3\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^4\sqrt[3]{-e(c+dx)^3}}-\frac{b^3(c+dx)^4\text{Gamma}\left(\frac{4}{3},-e(c+dx)^3\right)}{3d^4\left(-e(c+dx)^3\right)^{4/3}}-\frac{b^2(bc-ad)e^{e(c+dx)^3}}{d^4e}$$

```
[Out] -((b^2*(b*c - a*d)*E^(e*(c + d*x)^3))/(d^4*e)) + ((b*c - a*d)^3*(
c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d^4*(-(e*(c + d*x)^3))^
(1/3)) - (b*(b*c - a*d)^2*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)
])/(d^4*(-(e*(c + d*x)^3))^(2/3)) - (b^3*(c + d*x)^4*Gamma[4/3, -
(e*(c + d*x)^3)])/(3*d^4*(-(e*(c + d*x)^3))^(4/3))
```

Rubi [A] time = 0.273453, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$-\frac{b(c+dx)^2(bc-ad)^2\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{d^4\left(-e(c+dx)^3\right)^{2/3}}+\frac{(c+dx)(bc-ad)^3\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^4\sqrt[3]{-e(c+dx)^3}}-\frac{b^3(c+dx)^4\text{Gamma}\left(\frac{4}{3},-e(c+dx)^3\right)}{3d^4\left(-e(c+dx)^3\right)^{4/3}}-\frac{b^2(bc-ad)e^{e(c+dx)^3}}{d^4e}$$

Antiderivative was successfully verified.

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

```
[Out] -((b^2*(b*c - a*d)*E^(e*(c + d*x)^3))/(d^4*e)) + ((b*c - a*d)^3*(
c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d^4*(-(e*(c + d*x)^3))^
(1/3)) - (b*(b*c - a*d)^2*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)
])/(d^4*(-(e*(c + d*x)^3))^(2/3)) - (b^3*(c + d*x)^4*Gamma[4/3, -
(e*(c + d*x)^3)])/(3*d^4*(-(e*(c + d*x)^3))^(4/3))
```

Rubi in Sympy [A] time = 35.8588, size = 160, normalized size = 0.9

$$-\frac{b^3(c+dx)^4\left(\frac{4}{3},-e(c+dx)^3\right)}{3d^4\left(-e(c+dx)^3\right)^{\frac{4}{3}}}+\frac{b^2(ad-bc)e^{e(c+dx)^3}}{d^4e}-\frac{b(c+dx)^2(ad-bc)^2\left(\frac{2}{3},-e(c+dx)^3\right)}{d^4\left(-e(c+dx)^3\right)^{\frac{2}{3}}}-\frac{(c+dx)(ad-bc)^3\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^4\sqrt[3]{-e(c+dx)^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*(d*x+c)**3)*(b*x+a)**3,x)
```

```
[Out] -b**3*(c + d*x)**4*Gamma(4/3, -e*(c + d*x)**3)/(3*d**4*(-e*(c + d
*x)**3)**(4/3)) + b**2*(a*d - b*c)*exp(e*(c + d*x)**3)/(d**4*e) -
 b*(c + d*x)**2*(a*d - b*c)**2*Gamma(2/3, -e*(c + d*x)**3)/(d**4*
(-e*(c + d*x)**3)**(2/3)) - (c + d*x)*(a*d - b*c)**3*Gamma(1/3, -
e*(c + d*x)**3)/(3*d**4*(-e*(c + d*x)**3)**(1/3))
```

Mathematica [A] time = 0.731863, size = 0, normalized size = 0.

$$\int e^{e(c+dx)^3}(a+bx)^3\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[E^(e*(c + d*x)^3)*(a + b*x)^3, x]
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int \mathrm{e}^{e(dx+c)^3}(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(exp(e*(d*x+c)^3)*(b*x+a)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^3 e^{\left((dx+c)^3 e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)^3*e^((d*x + c)^3*e), x)
```

Fricas [A] time = 0.256309, size = 327, normalized size = 1.85

$$-\frac{9\left(b^3c^2d^2-2\,ab^2cd^3+a^2bd^4\right)e\left(\frac{2}{3},-d^3ex^3-3\,cd^2ex^2-3\,c^2dex-c^3e\right)-3\left(b^3dx-2\,b^3c+3\,ab^2d\right)\left(-d^3e\right)^{\frac{2}{3}}e^{\left(d^3ex^3+3\,cd^2e\right)}}{9\left(-d^3e\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/9*(9*(b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*e*gamma(2/3, -d
^3*e*x^3 - 3*c*d^2*e*x^2 - 3*c^2*d*e*x - c^3*e) - 3*(b^3*d*x - 2*
b^3*c + 3*a*b^2*d)*(-d^3*e)^(2/3)*e^(d^3*e*x^3 + 3*c*d^2*e*x^2 +
3*c^2*d*e*x + c^3*e) - (b^3*d + 3*(b^3*c^3*d - 3*a*b^2*c^2*d^2 +
3*a^2*b*c*d^3 - a^3*d^4)*e)*(-d^3*e)^(1/3)*gamma(1/3, -d^3*e*x^3
- 3*c*d^2*e*x^2 - 3*c^2*d*e*x - c^3*e))/((-d^3*e)^(2/3)*d^4*e)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*(d*x+c)**3)*(b*x+a)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^3 e^{\left((dx+c)^3 e\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)^3*e^((d*x + c)^3*e), x)
```

3.392 $\int e^{e(c+dx)^3}(a+bx)^2\,dx$

Optimal. Leaf size=126

$$\frac{2b(c+dx)^2(bc-ad)\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{3d^3\left(-e(c+dx)^3\right)^{2/3}}-\frac{(c+dx)(bc-ad)^2\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^3\sqrt[3]{-e(c+dx)^3}}+\frac{b^2e^{e(c+dx)^3}}{3d^3e}$$

```
[Out] (b^2*E^(e*(c + d*x)^3))/(3*d^3*e) - ((b*c - a*d)^2*(c + d*x)*Gamm
a[1/3, -(e*(c + d*x)^3)])/(3*d^3*(-(e*(c + d*x)^3))^(1/3)) + (2*b
*(b*c - a*d)*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)])/(3*d^3*(-(
e*(c + d*x)^3))^(2/3))
```

Rubi [A] time = 0.185527, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{2b(c+dx)^2(bc-ad)\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{3d^3\left(-e(c+dx)^3\right)^{2/3}}-\frac{(c+dx)(bc-ad)^2\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^3\sqrt[3]{-e(c+dx)^3}}+\frac{b^2e^{e(c+dx)^3}}{3d^3e}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e*(c + d*x)^3)*(a + b*x)^2,x]
```

```
[Out] (b^2*E^(e*(c + d*x)^3))/(3*d^3*e) - ((b*c - a*d)^2*(c + d*x)*Gamm
a[1/3, -(e*(c + d*x)^3)])/(3*d^3*(-(e*(c + d*x)^3))^(1/3)) + (2*b
*(b*c - a*d)*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)])/(3*d^3*(-(
e*(c + d*x)^3))^(2/3))
```

Rubi in Sympy [A] time = 24.2999, size = 114, normalized size = 0.9

$$\frac{b^2e^{e(c+dx)^3}}{3d^3e}-\frac{2b\,(c+dx)^2\,(ad-bc)\left(\frac{2}{3},-e\,(c+dx)^3\right)}{3d^3\left(-e\,(c+dx)^3\right)^{\frac{2}{3}}}-\frac{(c+dx)\,(ad-bc)^2\left(\frac{1}{3},-e\,(c+dx)^3\right)}{3d^3\sqrt[3]{-e\,(c+dx)^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*(d*x+c)**3)*(b*x+a)**2,x)
```

```
[Out] b**2*exp(e*(c + d*x)**3)/(3*d**3*e) - 2*b*(c + d*x)**2*(a*d - b*c
)*Gamma(2/3, -e*(c + d*x)**3)/(3*d**3*(-e*(c + d*x)**3)**(2/3)) -
 (c + d*x)*(a*d - b*c)**2*Gamma(1/3, -e*(c + d*x)**3)/(3*d**3*(-e
*(c + d*x)**3)**(1/3))
```

Mathematica [A] time = 0.457718, size = 0, normalized size = 0.

$$\int e^{e(c+dx)^3}(a+bx)^2\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e*(c + d*x)^3)*(a + b*x)^2,x]
```

```
[Out] Integrate[E^(e*(c + d*x)^3)*(a + b*x)^2, x]
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int \mathrm{e}^{e(dx+c)^3} (bx+a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*(d*x+c)^3)*(b*x+a)^2,x)
```

```
[Out] int(exp(e*(d*x+c)^3)*(b*x+a)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^2 e^{\left((dx+c)^3 e\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*e^((d*x + c)^3*e),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^2*e^((d*x + c)^3*e), x)
```

Fricas [A] time = 0.244782, size = 254, normalized size = 2.02

$$\frac{\left(-d^3 e\right)^{\frac{2}{3}} b^2 e^{\left(d^3 e x^3 + 3 \, c d^2 e x^2 + 3 \, c^2 d e x + c^3 e\right)} - \left(b^2 c^2 d - 2 \, a b c d^2 + a^2 d^3\right) \left(-d^3 e\right)^{\frac{1}{3}} e \left(\frac{1}{3}, -d^3 e x^3 - 3 \, c d^2 e x^2 - 3 \, c^2 d e x - c^3 e\right) + 2 \, (b}{3 \, \left(-d^3 e\right)^{\frac{2}{3}} d^3 e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*e^((d*x + c)^3*e),x, algorithm="fricas")
```

```
[Out] 1/3*((-d^3*e)^(2/3)*b^2*e^(d^3*e*x^3 + 3*c*d^2*e*x^2 + 3*c^2*d*e*
x + c^3*e) - (b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*(-d^3*e)^(1/3)*e
*gamma(1/3, -d^3*e*x^3 - 3*c*d^2*e*x^2 - 3*c^2*d*e*x - c^3*e) + 2
*(b^2*c*d^2 - a*b*d^3)*e*gamma(2/3, -d^3*e*x^3 - 3*c*d^2*e*x^2 -
3*c^2*d*e*x - c^3*e))/((-d^3*e)^(2/3)*d^3*e)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*(d*x+c)**3)*(b*x+a)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^2 e^{\left((dx+c)^3 e\right)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*e^((d*x + c)^3*e),x, algorithm="giac")

[Out] integrate((b*x + a)^2*e^((d*x + c)^3*e), x)
```

3.393 $\int e^{e(c+dx)^3}(a+bx)\,dx$

Optimal. Leaf size=92

$$\frac{(c+dx)(bc-ad)\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^2\sqrt[3]{-e(c+dx)^3}}-\frac{b(c+dx)^2\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{3d^2\left(-e(c+dx)^3\right)^{2/3}}$$

```
[Out] ((b*c - a*d)*(c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d^2*(-(e*
(c + d*x)^3))^(1/3)) - (b*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)
])/(3*d^2*(-(e*(c + d*x)^3))^(2/3))
```

Rubi [A] time = 0.109915, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$\frac{(c+dx)(bc-ad)\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d^2\sqrt[3]{-e(c+dx)^3}}-\frac{b(c+dx)^2\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{3d^2\left(-e(c+dx)^3\right)^{2/3}}$$

Antiderivative was successfully verified.

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

```
[Out] ((b*c - a*d)*(c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d^2*(-(e*
(c + d*x)^3))^(1/3)) - (b*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)
])/(3*d^2*(-(e*(c + d*x)^3))^(2/3))
```

Rubi in Sympy [A] time = 11.2215, size = 85, normalized size = 0.92

$$-\frac{b\left(c+dx\right)^2\left(\frac{2}{3},-e\left(c+dx\right)^3\right)}{3d^2\left(-e\left(c+dx\right)^3\right)^{\frac{2}{3}}}-\frac{\left(c+dx\right)\left(ad-bc\right)\left(\frac{1}{3},-e\left(c+dx\right)^3\right)}{3d^2\sqrt[3]{-e\left(c+dx\right)^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*(d*x+c)**3)*(b*x+a),x)
```

```
[Out] -b*(c + d*x)**2*Gamma(2/3, -e*(c + d*x)**3)/(3*d**2*(-e*(c + d*x)
**3)**(2/3)) - (c + d*x)*(a*d - b*c)*Gamma(1/3, -e*(c + d*x)**3)/
(3*d**2*(-e*(c + d*x)**3)**(1/3))
```

Mathematica [A] time = 0.583249, size = 0, normalized size = 0.

$$\int e^{e(c+dx)^3}(a+bx)\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[E^(e*(c + d*x)^3)*(a + b*x), x]
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int e^{e(dx+c)^3}(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(exp(e*(d*x+c)^3)*(b*x+a),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)e^{\left((dx+c)^3e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)*e^((d*x + c)^3*e), x)
```

Fricas [A] time = 0.255587, size = 144, normalized size = 1.57

$$-\frac{bd\,\Gamma\left(\frac{2}{3}, -d^3ex^3 - 3\,cd^2ex^2 - 3\,c^2dex - c^3e\right) - \left(-d^3e\right)^{\frac{1}{3}}(bc - ad)\,\Gamma\left(\frac{1}{3}, -d^3ex^3 - 3\,cd^2ex^2 - 3\,c^2dex - c^3e\right)}{3\left(-d^3e\right)^{\frac{2}{3}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(b*d*gamma(2/3, -d^3*e*x^3 - 3*c*d^2*e*x^2 - 3*c^2*d*e*x - c
^3*e) - (-d^3*e)^(1/3)*(b*c - a*d)*gamma(1/3, -d^3*e*x^3 - 3*c*d^
2*e*x^2 - 3*c^2*d*e*x - c^3*e))/((-d^3*e)^(2/3)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*(d*x+c)**3)*(b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)e^{\left((dx+c)^3e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)*e^((d*x + c)^3*e), x)
```

3.394 $\int e^{e(c+dx)^3}\,dx$

Optimal. Leaf size=40

$$-\frac{(c+dx)\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d\sqrt[3]{-e(c+dx)^3}}$$

```
[Out] -((c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d*(-(e*(c + d*x)^3))
^(1/3))
```

Rubi [A] time = 0.0150699, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(c+dx)\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d\sqrt[3]{-e(c+dx)^3}}$$

Antiderivative was successfully verified.

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

```
[Out] -((c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d*(-(e*(c + d*x)^3))
^(1/3))
```

Rubi in Sympy [A] time = 1.69646, size = 36, normalized size = 0.9

$$-\frac{(c+dx)\left(\frac{1}{3},-e\,(c+dx)^3\right)}{3d\sqrt[3]{-e\,(c+dx)^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*(d*x+c)**3),x)
```

```
[Out] -(c + d*x)*Gamma(1/3, -e*(c + d*x)**3)/(3*d*(-e*(c + d*x)**3)**(1
/3))
```

Mathematica [A] time = 0.00250611, size = 40, normalized size = 1.

$$-\frac{(c+dx)\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{3d\sqrt[3]{-e(c+dx)^3}}$$

Antiderivative was successfully verified.

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

```
[Out] -((c + d*x)*Gamma[1/3, -(e*(c + d*x)^3)])/(3*d*(-(e*(c + d*x)^3))
^(1/3))
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int e^{e(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(exp(e*(d*x+c)^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left((dx+c)^3 e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^((d*x + c)^3*e), x)
```

Fricas [A] time = 0.234419, size = 62, normalized size = 1.55

$$-\frac{\left(\frac{1}{3},\, -d^3ex^3 - 3\,cd^2ex^2 - 3\,c^2dex - c^3e\right)}{3\,\left(-d^3e\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*gamma(1/3, -d^3*e*x^3 - 3*c*d^2*e*x^2 - 3*c^2*d*e*x - c^3*e)
/(-d^3*e)^(1/3)
```

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

$$e^{c^3e}\int e^{d^3ex^3}e^{3cd^2ex^2}e^{3c^2dex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] exp(c**3*e)*Integral(exp(d**3*e*x**3)*exp(3*c*d**2*e*x**2)*exp(3*
c**2*d*e*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left((dx+c)^3 e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^((d*x + c)^3*e), x)
```

3.395 $\int \frac{e^{e(c+dx)^3}}{a+bx}\,dx$

Optimal. Leaf size=22

$$\text{Int}\left(\frac{e^{e(c+dx)^3}}{a+bx},x\right)$$

```
[Out] Unintegrable[E^(e*(c + d*x)^3)/(a + b*x), x]
```

Rubi [A] time = 0.0350013, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{e^{e(c+dx)^3}}{a+bx},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e*(c + d*x)^3)/(a + b*x),x]

[Out] Defer[Int][E^(e*(c + d*x)^3)/(a + b*x), x]
```

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

$$\int \frac{e^{e(c+dx)^3}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*(d*x+c)**3)/(b*x+a),x)

[Out] Integral(exp(e*(c + d*x)**3)/(a + b*x), x)
```

Mathematica [A] time = 0.583459, size = 0, normalized size = 0.

$$\int \frac{e^{e(c+dx)^3}}{a+bx}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e*(c + d*x)^3)/(a + b*x),x]

[Out] Integrate[E^(e*(c + d*x)^3)/(a + b*x), x]
```

Maple [A] time = 0.052, size = 0, normalized size = 0.

$$\int \frac{e^{e(dx+c)^3}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*(d*x+c)^3)/(b*x+a),x)

[Out] int(exp(e*(d*x+c)^3)/(b*x+a),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left((dx+c)^3 e\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^((d*x + c)^3*e)/(b*x + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(d^3ex^3+3\,cd^2ex^2+3\,c^2dex+c^3e\right)}}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(e^(d^3*e*x^3 + 3*c*d^2*e*x^2 + 3*c^2*d*e*x + c^3*e)/(b*x
 + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*(d*x+c)**3)/(b*x+a),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left((dx+c)^3 e\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^((d*x + c)^3*e)/(b*x + a), x)
```

3.396 $\int \frac{e^{e(c+dx)^3}}{(a+bx)^2} dx$

Optimal. Leaf size=153

$$\frac{3de(bc-ad)^2\text{Int}\left(\frac{e^{e(c+dx)^3}}{a+bx},x\right)}{b^3}-\frac{de(c+dx)(bc-ad)\text{Gamma}\left(\frac{1}{3},-e(c+dx)^3\right)}{b^3\sqrt[3]{-e(c+dx)^3}}-\frac{de(c+dx)^2\text{Gamma}\left(\frac{2}{3},-e(c+dx)^3\right)}{b^2\left(-e(c+dx)^3\right)^{2/3}}-\frac{e^{e(c+dx)^3}}{b(a+bx)}$$

```
[Out] -(E^(e*(c + d*x)^3)/(b*(a + b*x))) - (d*(b*c - a*d)*e*(c + d*x)*G
amma[1/3, -(e*(c + d*x)^3)])/(b^3*(-(e*(c + d*x)^3))^(1/3)) - (d*
e*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)])/(b^2*(-(e*(c + d*x)^3
))^(2/3)) + (3*d*(b*c - a*d)^2*e*Unintegrable[E^(e*(c + d*x)^3)/(
a + b*x), x])/b^3
```

Rubi [A] time = 0.548302, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{e(c+dx)^3}}{(a+bx)^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e*(c + d*x)^3)/(a + b*x)^2,x]
```

```
[Out] -(E^(e*(c + d*x)^3)/(b*(a + b*x))) - (d*(b*c - a*d)*e*(c + d*x)*G
amma[1/3, -(e*(c + d*x)^3)])/(b^3*(-(e*(c + d*x)^3))^(1/3)) - (d*
e*(c + d*x)^2*Gamma[2/3, -(e*(c + d*x)^3)])/(b^2*(-(e*(c + d*x)^3
))^(2/3)) + (3*d*(b*c - a*d)^2*e*Defer[Int][E^(e*(c + d*x)^3)/(a
+ b*x), x])/b^3
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*(d*x+c)**3)/(b*x+a)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 3.09781, size = 0, normalized size = 0.

$$\int \frac{e^{e(c+dx)^3}}{(a+bx)^2} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e*(c + d*x)^3)/(a + b*x)^2,x]
```

```
[Out] Integrate[E^(e*(c + d*x)^3)/(a + b*x)^2, x]
```

Maple [A] time = 0.053, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{e(dx+c)^3}}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*(d*x+c)^3)/(b*x+a)^2,x)

[Out] int(exp(e*(d*x+c)^3)/(b*x+a)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left((dx+c)^3 e\right)}}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^((d*x + c)^3*e)/(b*x + a)^2,x, algorithm="maxima")

[Out] integrate(e^((d*x + c)^3*e)/(b*x + a)^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(d^3ex^3+3\,cd^2ex^2+3\,c^2dex+c^3e\right)}}{b^2x^2+2\,abx+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^((d*x + c)^3*e)/(b*x + a)^2,x, algorithm="fricas")

[Out] integral(e^(d^3*e*x^3 + 3*c*d^2*e*x^2 + 3*c^2*d*e*x + c^3*e)/(b^2
*x^2 + 2*a*b*x + a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*(d*x+c)**3)/(b*x+a)**2,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

undef

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^((d*x + c)^3*e)/(b*x + a)^2,x, algorithm="giac")

[Out] undef
```

3.397 $\int \frac{F^{a+\frac{b}{c+dx}}}{e+fx}\,dx$

Optimal. Leaf size=71

$$\frac{F^{a-\frac{bf}{de-cf}}\,\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{f}-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{f}$$

```
[Out] -((F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)])/f) + (F^(a - (b*f)/(d
*e - c*f))*ExpIntegralEi[(b*d*(e + f*x)*Log[F])/((d*e - c*f)*(c +
 d*x))])/f
```

Rubi [A] time = 0.620657, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.19

$$\frac{F^{a-\frac{bf}{de-cf}}\,\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{f}-\frac{F^a\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)}{f}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(e + f*x),x]
```

```
[Out] -((F^a*ExpIntegralEi[(b*Log[F])/(c + d*x)])/f) + (F^(a - (b*f)/(d
*e - c*f))*ExpIntegralEi[(b*d*(e + f*x)*Log[F])/((d*e - c*f)*(c +
 d*x))])/f
```

Rubi in Sympy [A] time = 27.4203, size = 65, normalized size = 0.92

$$-\frac{F^a\,\text{Ei}\left(\frac{b\log(F)}{c+dx}\right)}{f}+\frac{F^{\frac{a(cf-de)+bf}{cf-de}}\,\text{Ei}\left(-\frac{bd(e+fx)\log(F)}{(c+dx)(cf-de)}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(f*x+e),x)
```

```
[Out] -F**a*Ei(b*log(F)/(c + d*x))/f + F**((a*(c*f - d*e) + b*f)/(c*f -
 d*e))*Ei(-b*d*(e + f*x)*log(F)/((c + d*x)*(c*f - d*e)))/f
```

Mathematica [A] time = 0.0864028, size = 66, normalized size = 0.93

$$\frac{F^a\left(F^{\frac{bf}{cf-de}}\,\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)-\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}\right)\right)}{f}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(e + f*x),x]
```

```
[Out] (F^a*(-ExpIntegralEi[(b*Log[F])/(c + d*x)] + F^((b*f)/(-(d*e) + c
*f))*ExpIntegralEi[(b*d*(e + f*x)*Log[F])/((d*e - c*f)*(c + d*x))
]))/f
```

Maple [A] time = 0.043, size = 106, normalized size = 1.5

$$-\frac{1}{f}F^{\frac{acf-ade+bf}{cf-ed}}Ei\left(1,-\frac{b\ln(F)}{dx+c}-\ln(F)\,a-\frac{-\ln(F)\,acf+\ln(F)\,ade-\ln(F)\,bf}{cf-ed}\right)+\frac{F^{a}}{f}Ei\left(1,-\frac{b\ln(F)}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(f*x+e),x)
```

```
[Out] -1/f*F^((a*c*f-a*d*e+b*f)/(c*f-d*e))*Ei(1,-b*ln(F)/(d*x+c)-ln(F)*
a-(-ln(F)*a*c*f+ln(F)*a*d*e-ln(F)*b*f)/(c*f-d*e))+1/f*F^a*Ei(1,-b
*ln(F)/(d*x+c))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e),x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(f*x + e), x)
```

Fricas [A] time = 0.282594, size = 120, normalized size = 1.69

$$\frac{F^{\frac{ade-(ac+b)f}{de-cf}}\,\mathrm{Ei}\left(\frac{(bdfx+bde)\log(F)}{cde-c^2f+(d^2e-cdf)x}\right)-F^{a}\mathrm{Ei}\left(\frac{b\log(F)}{dx+c}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e),x, algorithm="fricas")
```

```
[Out] (F^((a*d*e - (a*c + b)*f)/(d*e - c*f))*Ei((b*d*f*x + b*d*e)*log(F
)/(c*d*e - c^2*f + (d^2*e - c*d*f)*x)) - F^a*Ei(b*log(F)/(d*x + c
)))/f
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(f*x+e),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e),x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c))/(f*x + e), x)
```

3.398 $\int \frac{F^{a+\frac{b}{c+dx}}}{(e+fx)^2} dx$

Optimal. Leaf size=116

$$-\frac{bd\log(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^2}+\frac{dF^{a+\frac{b}{c+dx}}}{f(de-cf)}-\frac{F^{a+\frac{b}{c+dx}}}{f(e+fx)}$$

```
[Out] (d*F^(a + b/(c + d*x)))/(f*(d*e - c*f)) - F^(a + b/(c + d*x))/(f*
(e + f*x)) - (b*d*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e
 + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F])/(d*e - c*f)^2
```

Rubi [A] time = 1.56181, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{bd\log(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^2}+\frac{dF^{a+\frac{b}{c+dx}}}{f(de-cf)}-\frac{F^{a+\frac{b}{c+dx}}}{f(e+fx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(e + f*x)^2,x]
```

```
[Out] (d*F^(a + b/(c + d*x)))/(f*(d*e - c*f)) - F^(a + b/(c + d*x))/(f*
(e + f*x)) - (b*d*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e
 + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F])/(d*e - c*f)^2
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(f*x+e)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.31785, size = 116, normalized size = 1.

$$-\frac{bd\log(F)F^{a+\frac{bf}{cf-de}}\text{ExpIntegralEi}\left(\frac{b\log(F)}{c+dx}-\frac{bf\log(F)}{cf-de}\right)}{(de-cf)^2}+\frac{dF^{a+\frac{b}{c+dx}}}{f(de-cf)}-\frac{F^{a+\frac{b}{c+dx}}}{f(e+fx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b/(c + d*x))/(e + f*x)^2,x]
```

```
[Out] (d*F^(a + b/(c + d*x)))/(f*(d*e - c*f)) - F^(a + b/(c + d*x))/(f*
(e + f*x)) - (b*d*F^(a + (b*f)/(-(d*e) + c*f))*ExpIntegralEi[-((b
*f*Log[F])/(-(d*e) + c*f)) + (b*Log[F])/(c + d*x)]*Log[F])/(d*e -
 c*f)^2
```

Maple [A] time = 0.044, size = 196, normalized size = 1.7

$$\frac{\ln(F)\,bd}{(cf-ed)^2}F^{\frac{xda+ac+b}{dx+c}}\left(\frac{b\ln(F)}{dx+c}+\ln(F)\,a-\frac{\ln(F)\,acf}{cf-ed}+\frac{\ln(F)\,ade}{cf-ed}-\frac{\ln(F)\,bf}{cf-ed}\right)^{-1} + \frac{\ln(F)\,bd}{(cf-ed)^2}F^{\frac{acf-ade+bf}{cf-ed}}Ei\left(1,-\frac{b\ln(F)}{dx+c}-\ln(F)\,a-\frac{-\ln(F)\,acf+\ln(F)\,ade-\ln(F)\,bf}{cf-ed}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(f*x+e)^2,x)
```

```
[Out] d*b*ln(F)/(c*f-d*e)^2*F^((a*d*x+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c)+
ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-d*
e)*ln(F)*b*f)+d*b*ln(F)/(c*f-d*e)^2*F^((a*c*f-a*d*e+b*f)/(c*f-d*e
))*Ei(1,-b*ln(F)/(d*x+c)-ln(F)*a-(-ln(F)*a*c*f+ln(F)*a*d*e-ln(F)*
b*f)/(c*f-d*e))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(fx+e)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(f*x + e)^2, x)
```

Fricas [A] time = 0.278553, size = 242, normalized size = 2.09

$$-\frac{(bdfx+bde)F^{\frac{ade-(ac+b)f}{de-cf}}\,\mathrm{Ei}\left(\frac{(bdfx+bde)\log(F)}{cde-c^2f+(d^2e-cdf)x}\right)\log(F)-\left(cde-c^2f+\left(d^2e-cdf\right)x\right)F^{\frac{adx+ac+b}{dx+c}}}{d^2e^3-2\,cde^2f+c^2ef^2+(d^2e^2f-2\,cdef^2+c^2f^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^2,x, algorithm="fricas")
```

```
[Out] -((b*d*f*x + b*d*e)*F^((a*d*e - (a*c + b)*f)/(d*e - c*f))*Ei((b*d
*f*x + b*d*e)*log(F)/(c*d*e - c^2*f + (d^2*e - c*d*f)*x))*log(F)
- (c*d*e - c^2*f + (d^2*e - c*d*f)*x)*F^((a*d*x + a*c + b)/(d*x +
 c)))/(d^2*e^3 - 2*c*d*e^2*f + c^2*e*f^2 + (d^2*e^2*f - 2*c*d*e*f
^2 + c^2*f^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(f*x+e)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(fx+e)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^2,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c))/(f*x + e)^2, x)
```

3.399 $\int \frac{F^{a+\frac{b}{c+dx}}}{(e+fx)^3}\,dx$

Optimal. Leaf size=267

$$\frac{b^2d^2f\log^2(F)F^{a-\frac{bf}{de-cf}}\,\mathrm{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{2(de-cf)^4}-\frac{bd^2\log(F)F^{a-\frac{bf}{de-cf}}\,\mathrm{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^3}+\frac{d^2F^{a+\frac{b}{c+dx}}}{2f(de-cf)^2}-\frac{bd^2\log(F)F^{a+\frac{b}{c+dx}}}{2(de-cf)^3}-\frac{F^{a+\frac{b}{c+dx}}}{2f(e+fx)^2}+\frac{bd\log(F)F^{a+\frac{b}{c+dx}}}{2(e+fx)(de-cf)^2}$$

```
[Out] (d^2*F^(a + b/(c + d*x)))/(2*f*(d*e - c*f)^2) - F^(a + b/(c + d*x
))/(2*f*(e + f*x)^2) - (b*d^2*F^(a + b/(c + d*x))*Log[F])/(2*(d*e
 - c*f)^3) + (b*d*F^(a + b/(c + d*x))*Log[F])/(2*(d*e - c*f)^2*(e
 + f*x)) - (b*d^2*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e
 + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F])/(d*e - c*f)^3 +
(b^2*d^2*f*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e + f*x)
*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F]^2)/(2*(d*e - c*f)^4)
```

Rubi [A] time = 3.07482, antiderivative size = 267, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{b^2d^2f\log^2(F)F^{a-\frac{bf}{de-cf}}\,\mathrm{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{2(de-cf)^4}-\frac{bd^2\log(F)F^{a-\frac{bf}{de-cf}}\,\mathrm{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^3}+\frac{d^2F^{a+\frac{b}{c+dx}}}{2f(de-cf)^2}-\frac{bd^2\log(F)F^{a+\frac{b}{c+dx}}}{2(de-cf)^3}-\frac{F^{a+\frac{b}{c+dx}}}{2f(e+fx)^2}+\frac{bd\log(F)F^{a+\frac{b}{c+dx}}}{2(e+fx)(de-cf)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(e + f*x)^3,x]
```

```
[Out] (d^2*F^(a + b/(c + d*x)))/(2*f*(d*e - c*f)^2) - F^(a + b/(c + d*x
))/(2*f*(e + f*x)^2) - (b*d^2*F^(a + b/(c + d*x))*Log[F])/(2*(d*e
 - c*f)^3) + (b*d*F^(a + b/(c + d*x))*Log[F])/(2*(d*e - c*f)^2*(e
 + f*x)) - (b*d^2*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e
 + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F])/(d*e - c*f)^3 +
(b^2*d^2*f*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e + f*x)
*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F]^2)/(2*(d*e - c*f)^4)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(f*x+e)**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.552767, size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{c+dx}}}{(e+fx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b/(c + d*x))/(e + f*x)^3,x]

[Out] Integrate[F^(a + b/(c + d*x))/(e + f*x)^3, x]
```

Maple [B] time = 0.069, size = 521, normalized size = 2.

$$-\frac{\ln(F)\,bd^2}{(cf-ed)^3}F^{\frac{xda+ac+b}{dx+c}}\left(\frac{b\ln(F)}{dx+c}+\ln(F)\,a-\frac{\ln(F)\,acf}{cf-ed}+\frac{\ln(F)\,ade}{cf-ed}-\frac{\ln(F)\,bf}{cf-ed}\right)^{-1}$$
$$-\frac{\ln(F)\,bd^2}{(cf-ed)^3}F^{\frac{acf-ade+bf}{cf-ed}}Ei\left(1,-\frac{b\ln(F)}{dx+c}-\ln(F)\,a-\frac{-\ln(F)\,acf+\ln(F)\,ade-\ln(F)\,bf}{cf-ed}\right)$$
$$-\frac{(\ln(F))^2\,b^2d^2f}{2\,(cf-ed)^4}F^{\frac{xda+ac+b}{dx+c}}\left(\frac{b\ln(F)}{dx+c}+\ln(F)\,a-\frac{\ln(F)\,acf}{cf-ed}+\frac{\ln(F)\,ade}{cf-ed}-\frac{\ln(F)\,bf}{cf-ed}\right)^{-2}$$
$$-\frac{(\ln(F))^2\,b^2d^2f}{2\,(cf-ed)^4}F^{\frac{xda+ac+b}{dx+c}}\left(\frac{b\ln(F)}{dx+c}+\ln(F)\,a-\frac{\ln(F)\,acf}{cf-ed}+\frac{\ln(F)\,ade}{cf-ed}-\frac{\ln(F)\,bf}{cf-ed}\right)^{-1}$$
$$-\frac{(\ln(F))^2\,b^2d^2f}{2\,(cf-ed)^4}F^{\frac{acf-ade+bf}{cf-ed}}Ei\left(1,-\frac{b\ln(F)}{dx+c}-\ln(F)\,a-\frac{-\ln(F)\,acf+\ln(F)\,ade-\ln(F)\,bf}{cf-ed}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(f*x+e)^3,x)

[Out] -b*d^2*ln(F)/(c*f-d*e)^3*F^((a*d*x+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+
c)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f
-d*e)*ln(F)*b*f)-b*d^2*ln(F)/(c*f-d*e)^3*F^((a*c*f-a*d*e+b*f)/(c*
f-d*e))*Ei(1,-b*ln(F)/(d*x+c)-ln(F)*a-(-ln(F)*a*c*f+ln(F)*a*d*e-l
n(F)*b*f)/(c*f-d*e))-1/2*b^2*d^2*ln(F)^2*f/(c*f-d*e)^4*F^((a*d*x+
a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+
1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-d*e)*ln(F)*b*f)^2-1/2*b^2*d^2*ln(F
)^2*f/(c*f-d*e)^4*F^((a*d*x+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c)+ln(F
)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-d*e)*l
n(F)*b*f)-1/2*b^2*d^2*ln(F)^2*f/(c*f-d*e)^4*F^((a*c*f-a*d*e+b*f)/
(c*f-d*e))*Ei(1,-b*ln(F)/(d*x+c)-ln(F)*a-(-ln(F)*a*c*f+ln(F)*a*d*
e-ln(F)*b*f)/(c*f-d*e))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(fx+e)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^3,x, algorithm="maxima")

[Out] integrate(F^(a + b/(d*x + c))/(f*x + e)^3, x)
```

Fricas [A] time = 0.292265, size = 749, normalized size = 2.81

$$\frac{\left(\left(b^2d^2f^3x^2 + 2\,b^2d^2ef^2x + b^2d^2e^2f\right)\log\left(F\right)^2 - 2\left(bd^3e^3 - bcd^2e^2f + \left(bd^3ef^2 - bcd^2f^3\right)x^2 + 2\left(bd^3e^2f - bcd^2ef^2\right)x\right)\log}{2\left(d^4e^6 - 4\,cd^3e^5f + 6\,c^2d^2e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^3,x, algorithm="fricas")
```

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

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(f*x+e)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(fx+e)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^3,x, algorithm="giac")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(f*x + e)^3, x)
```

3.400 $\int \frac{F^{a+\frac{b}{c+dx}}}{(e+fx)^4}\,dx$

Optimal. Leaf size=460

$$-\frac{b^3d^3f^2\log^3(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{6(de-cf)^6}+\frac{b^2d^3f\log^2(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^5}+\frac{b^2d^3f\log^2(F)F^{a+\frac{b}{c+dx}}}{6(de-cf)^5}-\frac{b^2d^2f\log^2(F)F^{a+\frac{b}{c+dx}}}{6(e+fx)(de-cf)^4}-\frac{bd^3\log(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^4}+\frac{d^3F^{a+\frac{b}{c+dx}}}{3f(de-cf)^3}-\frac{5bd^3\log(F)F^{a+\frac{b}{c+dx}}}{6(de-cf)^4}+\frac{2bd^2\log(F)F^{a+\frac{b}{c+dx}}}{3(e+fx)(de-cf)^3}-\frac{F^{a+\frac{b}{c+dx}}}{3f(e+fx)^3}+\frac{bd\log(F)F^{a+\frac{b}{c+dx}}}{6(e+fx)^2(de-cf)^2}$$

```
[Out] (d^3*F^(a + b/(c + d*x)))/(3*f*(d*e - c*f)^3) - F^(a + b/(c + d*x
))/(3*f*(e + f*x)^3) - (5*b*d^3*F^(a + b/(c + d*x))*Log[F])/(6*(d
*e - c*f)^4) + (b*d*F^(a + b/(c + d*x))*Log[F])/(6*(d*e - c*f)^2*
(e + f*x)^2) + (2*b*d^2*F^(a + b/(c + d*x))*Log[F])/(3*(d*e - c*f
)^3*(e + f*x)) - (b*d^3*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(
b*d*(e + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F])/(d*e - c*f
)^4 + (b^2*d^3*f*F^(a + b/(c + d*x))*Log[F]^2)/(6*(d*e - c*f)^5)
- (b^2*d^2*f*F^(a + b/(c + d*x))*Log[F]^2)/(6*(d*e - c*f)^4*(e +
f*x)) + (b^2*d^3*f*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(
e + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F]^2)/(d*e - c*f)^5
 - (b^3*d^3*f^2*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e +
 f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F]^3)/(6*(d*e - c*f)^6
)
```

Rubi [A] time = 6.21191, antiderivative size = 460, normalized size of antiderivative = 1., number of steps used = 36, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$-\frac{b^3d^3f^2\log^3(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{6(de-cf)^6}+\frac{b^2d^3f\log^2(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^5}+\frac{b^2d^3f\log^2(F)F^{a+\frac{b}{c+dx}}}{6(de-cf)^5}-\frac{b^2d^2f\log^2(F)F^{a+\frac{b}{c+dx}}}{6(e+fx)(de-cf)^4}-\frac{bd^3\log(F)F^{a-\frac{bf}{de-cf}}\text{ExpIntegralEi}\left(\frac{bd\log(F)(e+fx)}{(c+dx)(de-cf)}\right)}{(de-cf)^4}+\frac{d^3F^{a+\frac{b}{c+dx}}}{3f(de-cf)^3}-\frac{5bd^3\log(F)F^{a+\frac{b}{c+dx}}}{6(de-cf)^4}+\frac{2bd^2\log(F)F^{a+\frac{b}{c+dx}}}{3(e+fx)(de-cf)^3}-\frac{F^{a+\frac{b}{c+dx}}}{3f(e+fx)^3}+\frac{bd\log(F)F^{a+\frac{b}{c+dx}}}{6(e+fx)^2(de-cf)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b/(c + d*x))/(e + f*x)^4,x]
```


```
[Out] (d^3*F^(a + b/(c + d*x)))/(3*f*(d*e - c*f)^3) - F^(a + b/(c + d*x
))/(3*f*(e + f*x)^3) - (5*b*d^3*F^(a + b/(c + d*x))*Log[F])/(6*(d
*e - c*f)^4) + (b*d*F^(a + b/(c + d*x))*Log[F])/(6*(d*e - c*f)^2*
(e + f*x)^2) + (2*b*d^2*F^(a + b/(c + d*x))*Log[F])/(3*(d*e - c*f
)^3*(e + f*x)) - (b*d^3*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(
b*d*(e + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F])/(d*e - c*f
)^4 + (b^2*d^3*f*F^(a + b/(c + d*x))*Log[F]^2)/(6*(d*e - c*f)^5)
- (b^2*d^2*f*F^(a + b/(c + d*x))*Log[F]^2)/(6*(d*e - c*f)^4*(e +
f*x)) + (b^2*d^3*f*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(
e + f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F]^2)/(d*e - c*f)^5
 - (b^3*d^3*f^2*F^(a - (b*f)/(d*e - c*f))*ExpIntegralEi[(b*d*(e +
 f*x)*Log[F])/((d*e - c*f)*(c + d*x))]*Log[F]^3)/(6*(d*e - c*f)^6
```

)

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b/(d*x+c))/(f*x+e)**4,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.31183, size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{c+dx}}}{(e+fx)^4} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b/(c + d*x))/(e + f*x)^4,x]
```

```
[Out] Integrate[F^(a + b/(c + d*x))/(e + f*x)^4, x]
```

Maple [B] time = 0.115, size = 952, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b/(d*x+c))/(f*x+e)^4,x)
```

```
[Out] b*d^3*ln(F)/(c*f-d*e)^4*F^((a*d*x+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c
)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-
d*e)*ln(F)*b*f)+b*d^3*ln(F)/(c*f-d*e)^4*F^((a*c*f-a*d*e+b*f)/(c*f
-d*e))*Ei(1,-b*ln(F)/(d*x+c)-ln(F)*a-(-ln(F)*a*c*f+ln(F)*a*d*e-ln
(F)*b*f)/(c*f-d*e))+1/3*b^3*d^3*ln(F)^3*f^2/(c*f-d*e)^6*F^((a*d*x
+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f
+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-d*e)*ln(F)*b*f)^3+1/6*b^3*d^3*ln(
F)^3*f^2/(c*f-d*e)^6*F^((a*d*x+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c)+l
n(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-d*e
)*ln(F)*b*f)^2+1/6*b^3*d^3*ln(F)^3*f^2/(c*f-d*e)^6*F^((a*d*x+a*c+
b)/(d*x+c))/(b*ln(F)/(d*x+c)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c
*f-d*e)*ln(F)*a*d*e-1/(c*f-d*e)*ln(F)*b*f)+1/6*b^3*d^3*ln(F)^3*f^
2/(c*f-d*e)^6*F^((a*c*f-a*d*e+b*f)/(c*f-d*e))*Ei(1,-b*ln(F)/(d*x+
c)-ln(F)*a-(-ln(F)*a*c*f+ln(F)*a*d*e-ln(F)*b*f)/(c*f-d*e))+b^2*d^
3*ln(F)^2*f/(c*f-d*e)^5*F^((a*d*x+a*c+b)/(d*x+c))/(b*ln(F)/(d*x+c
)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-d*e)*ln(F)*a*d*e-1/(c*f-
d*e)*ln(F)*b*f)^2+b^2*d^3*ln(F)^2*f/(c*f-d*e)^5*F^((a*d*x+a*c+b)/
(d*x+c))/(b*ln(F)/(d*x+c)+ln(F)*a-1/(c*f-d*e)*ln(F)*a*c*f+1/(c*f-
d*e)*ln(F)*a*d*e-1/(c*f-d*e)*ln(F)*b*f)+b^2*d^3*ln(F)^2*f/(c*f-d*
e)^5*F^((a*c*f-a*d*e+b*f)/(c*f-d*e))*Ei(1,-b*ln(F)/(d*x+c)-ln(F)*
a-(-ln(F)*a*c*f+ln(F)*a*d*e-ln(F)*b*f)/(c*f-d*e))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(fx+e)^4} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^4,x, algorithm="maxima")
```

```
[Out] integrate(F^(a + b/(d*x + c))/(f*x + e)^4, x)
```

Fricas [A] time = 0.284307, size = 1858, normalized size = 4.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(((b^3*d^3*f^5*x^3 + 3*b^3*d^3*e*f^4*x^2 + 3*b^3*d^3*e^2*f^3
*x + b^3*d^3*e^3*f^2)*log(F)^3 - 6*(b^2*d^4*e^4*f - b^2*c*d^3*e^3
*f^2 + (b^2*d^4*e*f^4 - b^2*c*d^3*f^5)*x^3 + 3*(b^2*d^4*e^2*f^3 -
 b^2*c*d^3*e*f^4)*x^2 + 3*(b^2*d^4*e^3*f^2 - b^2*c*d^3*e^2*f^3)*x
)*log(F)^2 + 6*(b*d^5*e^5 - 2*b*c*d^4*e^4*f + b*c^2*d^3*e^3*f^2 +
 (b*d^5*e^2*f^3 - 2*b*c*d^4*e*f^4 + b*c^2*d^3*f^5)*x^3 + 3*(b*d^5
*e^3*f^2 - 2*b*c*d^4*e^2*f^3 + b*c^2*d^3*e*f^4)*x^2 + 3*(b*d^5*e^
4*f - 2*b*c*d^4*e^3*f^2 + b*c^2*d^3*e^2*f^3)*x)*log(F))*F^((a*d*e
 - (a*c + b)*f)/(d*e - c*f))*Ei((b*d*f*x + b*d*e)*log(F)/(c*d*e -
 c^2*f + (d^2*e - c*d*f)*x)) - (6*c*d^5*e^5 - 24*c^2*d^4*e^4*f +
38*c^3*d^3*e^3*f^2 - 30*c^4*d^2*e^2*f^3 + 12*c^5*d*e*f^4 - 2*c^6*
f^5 + 2*(d^6*e^3*f^2 - 3*c*d^5*e^2*f^3 + 3*c^2*d^4*e*f^4 - c^3*d^
3*f^5)*x^3 + 6*(d^6*e^4*f - 3*c*d^5*e^3*f^2 + 3*c^2*d^4*e^2*f^3 -
 c^3*d^3*e*f^4)*x^2 + (b^2*c*d^3*e^3*f^2 - b^2*c^2*d^2*e^2*f^3 +
(b^2*d^4*e*f^4 - b^2*c*d^3*f^5)*x^3 + (2*b^2*d^4*e^2*f^3 - b^2*c*
d^3*e*f^4 - b^2*c^2*d^2*f^5)*x^2 + (b^2*d^4*e^3*f^2 + b^2*c*d^3*e
^2*f^3 - 2*b^2*c^2*d^2*e*f^4)*x)*log(F)^2 + 6*(d^6*e^5 - 3*c*d^5*
e^4*f + 3*c^2*d^4*e^3*f^2 - c^3*d^3*e^2*f^3)*x - (6*b*c*d^4*e^4*f
 - 13*b*c^2*d^3*e^3*f^2 + 8*b*c^3*d^2*e^2*f^3 - b*c^4*d*e*f^4 + 5
*(b*d^5*e^2*f^3 - 2*b*c*d^4*e*f^4 + b*c^2*d^3*f^5)*x^3 + (11*b*d^
5*e^3*f^2 - 18*b*c*d^4*e^2*f^3 + 3*b*c^2*d^3*e*f^4 + 4*b*c^3*d^2*
f^5)*x^2 + (6*b*d^5*e^4*f - 2*b*c*d^4*e^3*f^2 - 15*b*c^2*d^3*e^2*
f^3 + 12*b*c^3*d^2*e*f^4 - b*c^4*d*f^5)*x)*log(F))*F^((a*d*x + a*
c + b)/(d*x + c)))/(d^6*e^9 - 6*c*d^5*e^8*f + 15*c^2*d^4*e^7*f^2
- 20*c^3*d^3*e^6*f^3 + 15*c^4*d^2*e^5*f^4 - 6*c^5*d*e^4*f^5 + c^6
*e^3*f^6 + (d^6*e^6*f^3 - 6*c*d^5*e^5*f^4 + 15*c^2*d^4*e^4*f^5 -
20*c^3*d^3*e^3*f^6 + 15*c^4*d^2*e^2*f^7 - 6*c^5*d*e*f^8 + c^6*f^9
)*x^3 + 3*(d^6*e^7*f^2 - 6*c*d^5*e^6*f^3 + 15*c^2*d^4*e^5*f^4 - 2
0*c^3*d^3*e^4*f^5 + 15*c^4*d^2*e^3*f^6 - 6*c^5*d*e^2*f^7 + c^6*e*
f^8)*x^2 + 3*(d^6*e^8*f - 6*c*d^5*e^7*f^2 + 15*c^2*d^4*e^6*f^3 -
20*c^3*d^3*e^5*f^4 + 15*c^4*d^2*e^4*f^5 - 6*c^5*d*e^3*f^6 + c^6*e
^2*f^7)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b/(d*x+c))/(f*x+e)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+\frac{b}{dx+c}}}{(fx+e)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(a + b/(d*x + c))/(f*x + e)^4,x, algorithm="giac")

[Out] integrate(F^(a + b/(d*x + c))/(f*x + e)^4, x)
```

3.401 $\int e^{\frac{e}{c+dx}}(a+bx)^4\,dx$

Optimal. Leaf size=346

$$-\frac{4b^3e^4(bc-ad)\text{Gamma}\left(-4,-\frac{e}{c+dx}\right)}{d^5}-\frac{b^4e^5\text{Gamma}\left(-5,-\frac{e}{c+dx}\right)}{d^5}-\frac{b^2e^3(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^5}+\frac{b^2e^2(c+dx)(bc-ad)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{b^2e(c+dx)^2(bc-ad)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{2b^2(c+dx)^3(bc-ad)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{2be^2(bc-ad)^3\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^5}-\frac{e(bc-ad)^4\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^5}-\frac{2be(c+dx)(bc-ad)^3e^{\frac{e}{c+dx}}}{d^5}-\frac{2b(c+dx)^2(bc-ad)^3e^{\frac{e}{c+dx}}}{d^5}+\frac{(c+dx)(bc-ad)^4e^{\frac{e}{c+dx}}}{d^5}$$

```
[Out] ((b*c - a*d)^4*E^(e/(c + d*x))*(c + d*x))/d^5 - (2*b*(b*c - a*d)^
3*e*E^(e/(c + d*x))*(c + d*x))/d^5 + (b^2*(b*c - a*d)^2*e^2*E^(e/
(c + d*x))*(c + d*x))/d^5 - (2*b*(b*c - a*d)^3*E^(e/(c + d*x))*(c
 + d*x)^2)/d^5 + (b^2*(b*c - a*d)^2*e*E^(e/(c + d*x))*(c + d*x)^2
)/d^5 + (2*b^2*(b*c - a*d)^2*E^(e/(c + d*x))*(c + d*x)^3)/d^5 - (
(b*c - a*d)^4*e*ExpIntegralEi[e/(c + d*x)])/d^5 + (2*b*(b*c - a*d
)^3*e^2*ExpIntegralEi[e/(c + d*x)])/d^5 - (b^2*(b*c - a*d)^2*e^3*
ExpIntegralEi[e/(c + d*x)])/d^5 - (b^4*e^5*Gamma[-5, -(e/(c + d*x
))])/d^5 - (4*b^3*(b*c - a*d)*e^4*Gamma[-4, -(e/(c + d*x))])/d^5
```

Rubi [A] time = 0.613073, antiderivative size = 346, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{4b^3e^4(bc-ad)\text{Gamma}\left(-4,-\frac{e}{c+dx}\right)}{d^5}-\frac{b^4e^5\text{Gamma}\left(-5,-\frac{e}{c+dx}\right)}{d^5}-\frac{b^2e^3(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^5}+\frac{b^2e^2(c+dx)(bc-ad)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{b^2e(c+dx)^2(bc-ad)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{2b^2(c+dx)^3(bc-ad)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{2be^2(bc-ad)^3\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^5}-\frac{e(bc-ad)^4\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^5}-\frac{2be(c+dx)(bc-ad)^3e^{\frac{e}{c+dx}}}{d^5}-\frac{2b(c+dx)^2(bc-ad)^3e^{\frac{e}{c+dx}}}{d^5}+\frac{(c+dx)(bc-ad)^4e^{\frac{e}{c+dx}}}{d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))*(a + b*x)^4,x]
```


```
[Out] ((b*c - a*d)^4*E^(e/(c + d*x))*(c + d*x))/d^5 - (2*b*(b*c - a*d)^
3*e*E^(e/(c + d*x))*(c + d*x))/d^5 + (b^2*(b*c - a*d)^2*e^2*E^(e/
(c + d*x))*(c + d*x))/d^5 - (2*b*(b*c - a*d)^3*E^(e/(c + d*x))*(c
 + d*x)^2)/d^5 + (b^2*(b*c - a*d)^2*e*E^(e/(c + d*x))*(c + d*x)^2
)/d^5 + (2*b^2*(b*c - a*d)^2*E^(e/(c + d*x))*(c + d*x)^3)/d^5 - (
(b*c - a*d)^4*e*ExpIntegralEi[e/(c + d*x)])/d^5 + (2*b*(b*c - a*d
)^3*e^2*ExpIntegralEi[e/(c + d*x)])/d^5 - (b^2*(b*c - a*d)^2*e^3*
ExpIntegralEi[e/(c + d*x)])/d^5 - (b^4*e^5*Gamma[-5, -(e/(c + d*x
))])/d^5 - (4*b^3*(b*c - a*d)*e^4*Gamma[-4, -(e/(c + d*x))])/d^5
```

Rubi in Sympy [A] time = 81.9882, size = 311, normalized size = 0.9

$$-\frac{b^4e^5\Gamma\left(-5,-\frac{e}{c+dx}\right)}{d^5}+\frac{4b^3e^4(ad-bc)\Gamma\left(-4,-\frac{e}{c+dx}\right)}{d^5}-\frac{b^2e^3(ad-bc)^2\operatorname{Ei}\left(\frac{e}{c+dx}\right)}{d^5}+\frac{b^2e^2(c+dx)(ad-bc)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{b^2e(c+dx)^2(ad-bc)^2e^{\frac{e}{c+dx}}}{d^5}+\frac{2b^2(c+dx)^3(ad-bc)^2e^{\frac{e}{c+dx}}}{d^5}-\frac{2be^2(ad-bc)^3\operatorname{Ei}\left(\frac{e}{c+dx}\right)}{d^5}+\frac{2be(c+dx)(ad-bc)^3e^{\frac{e}{c+dx}}}{d^5}+\frac{2b(c+dx)^2(ad-bc)^3e^{\frac{e}{c+dx}}}{d^5}-\frac{e(ad-bc)^4\operatorname{Ei}\left(\frac{e}{c+dx}\right)}{d^5}+\frac{(c+dx)(ad-bc)^4e^{\frac{e}{c+dx}}}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))*(b*x+a)**4,x)
```

```
[Out] -b**4*e**5*Gamma(-5, -e/(c + d*x))/d**5 + 4*b**3*e**4*(a*d - b*c)
*Gamma(-4, -e/(c + d*x))/d**5 - b**2*e**3*(a*d - b*c)**2*Ei(e/(c
+ d*x))/d**5 + b**2*e**2*(c + d*x)*(a*d - b*c)**2*exp(e/(c + d*x)
)/d**5 + b**2*e*(c + d*x)**2*(a*d - b*c)**2*exp(e/(c + d*x))/d**5
 + 2*b**2*(c + d*x)**3*(a*d - b*c)**2*exp(e/(c + d*x))/d**5 - 2*b
*e**2*(a*d - b*c)**3*Ei(e/(c + d*x))/d**5 + 2*b*e*(c + d*x)*(a*d
- b*c)**3*exp(e/(c + d*x))/d**5 + 2*b*(c + d*x)**2*(a*d - b*c)**3
*exp(e/(c + d*x))/d**5 - e*(a*d - b*c)**4*Ei(e/(c + d*x))/d**5 +
(c + d*x)*(a*d - b*c)**4*exp(e/(c + d*x))/d**5
```

Mathematica [A] time = 0.632384, size = 468, normalized size = 1.35

$$dxe^{\frac{e}{c+dx}}\left(120a^4d^4+240a^3bd^3(dx+e)+120a^2b^2d^2\left(-4ce+2d^2x^2+dex+e^2\right)+20ab^3d\left(18c^2e-2ce(3dx+5e)+6d^3x^3+2\ldots\right.\right.$$

$$+\frac{ce^{\frac{e}{c+dx}}\left(120a^4d^4-240a^3bd^3(c-e)+120a^2b^2d^2\left(2c^2-5ce+e^2\right)-20ab^3d\left(6c^3-26c^2e+11ce^2-e^3\right)+b^4\left(24c^4-154c^3e\ldots\right.\right.}{120d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x))*(a + b*x)^4,x]
```

```
[Out] (c*(120*a^4*d^4 - 240*a^3*b*d^3*(c - e) + 120*a^2*b^2*d^2*(2*c^2
- 5*c*e + e^2) - 20*a*b^3*d*(6*c^3 - 26*c^2*e + 11*c*e^2 - e^3) +
 b^4*(24*c^4 - 154*c^3*e + 102*c^2*e^2 - 19*c*e^3 + e^4))*E^(e/(c
 + d*x)))/(120*d^5) + (d*E^(e/(c + d*x))*x*(120*a^4*d^4 + 240*a^3
*b*d^3*(e + d*x) + 120*a^2*b^2*d^2*(-4*c*e + e^2 + d*e*x + 2*d^2*
x^2) + 20*a*b^3*d*(18*c^2*e + e^3 + d*e^2*x + 2*d^2*e*x^2 + 6*d^3
*x^3 - 2*c*e*(5*e + 3*d*x)) + b^4*(-96*c^3*e + e^4 + d*e^3*x + 2*
d^2*e^2*x^2 + 6*d^3*e*x^3 + 24*d^4*x^4 + 2*c^2*e*(43*e + 18*d*x)
- 2*c*e*(9*e^2 + 7*d*e*x + 8*d^2*x^2))) - e*(120*a^4*d^4 - 240*a^
3*b*d^3*(2*c - e) + 120*a^2*b^2*d^2*(6*c^2 - 6*c*e + e^2) - 20*a*
b^3*d*(24*c^3 - 36*c^2*e + 12*c*e^2 - e^3) + b^4*(120*c^4 - 240*c
^3*e + 120*c^2*e^2 - 20*c*e^3 + e^4))*ExpIntegralEi[e/(c + d*x)])
/(120*d^5)
```

Maple [B] time = 0.016, size = 1146, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c))*(b*x+a)^4,x)
```

```
[Out] -1/d*e*(a^4*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))+b^4/d^4*
e^4*(-1/5*(d*x+c)^5/e^5*exp(e/(d*x+c))-1/20*(d*x+c)^4/e^4*exp(e/(
d*x+c))-1/60*(d*x+c)^3/e^3*exp(e/(d*x+c))-1/120*exp(e/(d*x+c))*(d
*x+c)^2/e^2-1/120*(d*x+c)/e*exp(e/(d*x+c))-1/120*Ei(1,-e/(d*x+c))
)+b^4/d^4*c^4*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))+4*b^3/
d^3*e^3*a*(-1/4*(d*x+c)^4/e^4*exp(e/(d*x+c))-1/12*(d*x+c)^3/e^3*e
xp(e/(d*x+c))-1/24*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/24*(d*x+c)/e*ex
p(e/(d*x+c))-1/24*Ei(1,-e/(d*x+c)))-4*b^4/d^4*e^3*c*(-1/4*(d*x+c)
^4/e^4*exp(e/(d*x+c))-1/12*(d*x+c)^3/e^3*exp(e/(d*x+c))-1/24*exp(
e/(d*x+c))*(d*x+c)^2/e^2-1/24*(d*x+c)/e*exp(e/(d*x+c))-1/24*Ei(1,
-e/(d*x+c)))+6*b^2/d^2*e^2*a^2*(-1/3*(d*x+c)^3/e^3*exp(e/(d*x+c))
-1/6*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/6*(d*x+c)/e*exp(e/(d*x+c))-1/
6*Ei(1,-e/(d*x+c)))+6*b^4/d^4*e^2*c^2*(-1/3*(d*x+c)^3/e^3*exp(e/(
d*x+c))-1/6*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/6*(d*x+c)/e*exp(e/(d*x
+c))-1/6*Ei(1,-e/(d*x+c)))+4*b/d*e*a^3*(-1/2*exp(e/(d*x+c))*(d*x+
c)^2/e^2-1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c)))-4*b^4
/d^4*e*c^3*(-1/2*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/2*(d*x+c)/e*exp(e
/(d*x+c))-1/2*Ei(1,-e/(d*x+c)))-4*b/d*c*a^3*(-(d*x+c)/e*exp(e/(d*
x+c))-Ei(1,-e/(d*x+c)))+6*b^2/d^2*c^2*a^2*(-(d*x+c)/e*exp(e/(d*x+
c))-Ei(1,-e/(d*x+c)))-4*b^3/d^3*c^3*a*(-(d*x+c)/e*exp(e/(d*x+c))-
Ei(1,-e/(d*x+c)))-12*b^3/d^3*e^2*c*a*(-1/3*(d*x+c)^3/e^3*exp(e/(d
*x+c))-1/6*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/6*(d*x+c)/e*exp(e/(d*x+
c))-1/6*Ei(1,-e/(d*x+c)))-12*b^2/d^2*e*c*a^2*(-1/2*exp(e/(d*x+c))
*(d*x+c)^2/e^2-1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c)))
+12*b^3/d^3*e*c^2*a*(-1/2*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/2*(d*x+c
)/e*exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(24\,b^4d^4x^5+6\,\left(20\,ab^3d^4+b^4d^3e\right)x^4+2\,\left(120\,a^2b^2d^4+20\,ab^3d^3e-\left(8\,cd^2e-d^2e^2\right)b^4\right)x^3+\left(240\,a^3bd^4+120\,a^2b^2d^3e-20\,\left(\right.\right.}{}$$

$$+\int -\frac{\left(240\,a^3bc^2d^3e-120\,\left(4\,c^3d^2e-c^2d^2e^2\right)a^2b^2+20\,\left(18\,c^4de-10\,c^3de^2+c^2de^3\right)ab^3-\left(96\,c^5e-86\,c^4e^2+18\,c^3e^3-c^2e^4\right)b^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/120*(24*b^4*d^4*x^5 + 6*(20*a*b^3*d^4 + b^4*d^3*e)*x^4 + 2*(120
*a^2*b^2*d^4 + 20*a*b^3*d^3*e - (8*c*d^2*e - d^2*e^2)*b^4)*x^3 +
(240*a^3*b*d^4 + 120*a^2*b^2*d^3*e - 20*(6*c*d^2*e - d^2*e^2)*a*b
^3 + (36*c^2*d*e - 14*c*d*e^2 + d*e^3)*b^4)*x^2 + (120*a^4*d^4 +
240*a^3*b*d^3*e - 120*(4*c*d^2*e - d^2*e^2)*a^2*b^2 + 20*(18*c^2*
d*e - 10*c*d*e^2 + d*e^3)*a*b^3 - (96*c^3*e - 86*c^2*e^2 + 18*c*e
^3 - e^4)*b^4)*x)*e^(e/(d*x + c))/d^4 + integrate(-1/120*(240*a^3
*b*c^2*d^3*e - 120*(4*c^3*d^2*e - c^2*d^2*e^2)*a^2*b^2 + 20*(18*c
^4*d*e - 10*c^3*d*e^2 + c^2*d*e^3)*a*b^3 - (96*c^5*e - 86*c^4*e^2
 + 18*c^3*e^3 - c^2*e^4)*b^4 - (120*a^4*d^5*e - 240*(2*c*d^4*e -
d^4*e^2)*a^3*b + 120*(6*c^2*d^3*e - 6*c*d^3*e^2 + d^3*e^3)*a^2*b^
2 - 20*(24*c^3*d^2*e - 36*c^2*d^2*e^2 + 12*c*d^2*e^3 - d^2*e^4)*a
*b^3 + (120*c^4*d*e - 240*c^3*d*e^2 + 120*c^2*d*e^3 - 20*c*d*e^4
+ d*e^5)*b^4)*x)*e^(e/(d*x + c))/(d^6*x^2 + 2*c*d^5*x + c^2*d^4),
 x)
```

Fricas [A] time = 0.255135, size = 861, normalized size = 2.49

$$-\frac{\left(b^4e^5-20\,\left(b^4c-ab^3d\right)e^4+120\,\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)e^3-240\,\left(b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3\right)e^2+120\,\left(b^4c^4-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/120*((b^4*e^5 - 20*(b^4*c - a*b^3*d)*e^4 + 120*(b^4*c^2 - 2*a*
b^3*c*d + a^2*b^2*d^2)*e^3 - 240*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2
*b^2*c*d^2 - a^3*b*d^3)*e^2 + 120*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^
2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*e)*Ei(e/(d*x + c)) - (24
*b^4*d^5*x^5 + 24*b^4*c^5 - 120*a*b^3*c^4*d + 240*a^2*b^2*c^3*d^2
 - 240*a^3*b*c^2*d^3 + 120*a^4*c*d^4 + b^4*c*e^4 + 6*(20*a*b^3*d^
5 + b^4*d^4*e)*x^4 - (19*b^4*c^2 - 20*a*b^3*c*d)*e^3 + 2*(120*a^2
*b^2*d^5 + b^4*d^3*e^2 - 4*(2*b^4*c*d^3 - 5*a*b^3*d^4)*e)*x^3 + 2
*(51*b^4*c^3 - 110*a*b^3*c^2*d + 60*a^2*b^2*c*d^2)*e^2 + (240*a^3
*b*d^5 + b^4*d^2*e^3 - 2*(7*b^4*c*d^2 - 10*a*b^3*d^3)*e^2 + 12*(3
*b^4*c^2*d^2 - 10*a*b^3*c*d^3 + 10*a^2*b^2*d^4)*e)*x^2 - 2*(77*b^
4*c^4 - 260*a*b^3*c^3*d + 300*a^2*b^2*c^2*d^2 - 120*a^3*b*c*d^3)*
e + (120*a^4*d^5 + b^4*d*e^4 - 2*(9*b^4*c*d - 10*a*b^3*d^2)*e^3 +
 2*(43*b^4*c^2*d - 100*a*b^3*c*d^2 + 60*a^2*b^2*d^3)*e^2 - 24*(4*
b^4*c^3*d - 15*a*b^3*c^2*d^2 + 20*a^2*b^2*c*d^3 - 10*a^3*b*d^4)*e
)*x)*e^(e/(d*x + c)))/d^5
```

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

$$\int (a+bx)^4 e^{\frac{e}{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c))*(b*x+a)**4,x)
```

```
[Out] Integral((a + b*x)**4*exp(e/(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^4 e^{\left(\frac{e}{dx+c}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)^4*e^(e/(d*x + c)), x)
```

3.402 $\int e^{\frac{e}{c+dx}}(a+bx)^3\,dx$

Optimal. Leaf size=320

$$\frac{b^3e^4\text{Gamma}\left(-4,-\frac{e}{c+dx}\right)}{d^4}+\frac{b^2e^3(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^4}-\frac{b^2e^2(c+dx)(bc-ad)e^{\frac{e}{c+dx}}}{2d^4}-\frac{b^2e(c+dx)^2(bc-ad)e^{\frac{e}{c+dx}}}{2d^4}-\frac{b^2(c+dx)^3(bc-ad)e^{\frac{e}{c+dx}}}{d^4}-\frac{3be^2(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^4}+\frac{e(bc-ad)^3\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^4}+\frac{3be(c+dx)(bc-ad)^2e^{\frac{e}{c+dx}}}{2d^4}+\frac{3b(c+dx)^2(bc-ad)^2e^{\frac{e}{c+dx}}}{2d^4}-\frac{(c+dx)(bc-ad)^3e^{\frac{e}{c+dx}}}{d^4}$$

```
[Out] -(((b*c - a*d)^3*E^(e/(c + d*x))*(c + d*x))/d^4) + (3*b*(b*c - a*
d)^2*e*E^(e/(c + d*x))*(c + d*x))/(2*d^4) - (b^2*(b*c - a*d)*e^2*
E^(e/(c + d*x))*(c + d*x))/(2*d^4) + (3*b*(b*c - a*d)^2*E^(e/(c +
 d*x))*(c + d*x)^2)/(2*d^4) - (b^2*(b*c - a*d)*e*E^(e/(c + d*x))*
(c + d*x)^2)/(2*d^4) - (b^2*(b*c - a*d)*E^(e/(c + d*x))*(c + d*x)
^3)/d^4 + ((b*c - a*d)^3*e*ExpIntegralEi[e/(c + d*x)])/d^4 - (3*b
*(b*c - a*d)^2*e^2*ExpIntegralEi[e/(c + d*x)])/(2*d^4) + (b^2*(b*
c - a*d)*e^3*ExpIntegralEi[e/(c + d*x)])/(2*d^4) + (b^3*e^4*Gamma
[-4, -(e/(c + d*x))])/d^4
```

Rubi [A] time = 0.544979, antiderivative size = 320, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{b^3e^4\text{Gamma}\left(-4,-\frac{e}{c+dx}\right)}{d^4}+\frac{b^2e^3(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^4}-\frac{b^2e^2(c+dx)(bc-ad)e^{\frac{e}{c+dx}}}{2d^4}-\frac{b^2e(c+dx)^2(bc-ad)e^{\frac{e}{c+dx}}}{2d^4}-\frac{b^2(c+dx)^3(bc-ad)e^{\frac{e}{c+dx}}}{d^4}-\frac{3be^2(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^4}+\frac{e(bc-ad)^3\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^4}+\frac{3be(c+dx)(bc-ad)^2e^{\frac{e}{c+dx}}}{2d^4}+\frac{3b(c+dx)^2(bc-ad)^2e^{\frac{e}{c+dx}}}{2d^4}-\frac{(c+dx)(bc-ad)^3e^{\frac{e}{c+dx}}}{d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))*(a + b*x)^3,x]
```

```
[Out] -(((b*c - a*d)^3*E^(e/(c + d*x))*(c + d*x))/d^4) + (3*b*(b*c - a*
d)^2*e*E^(e/(c + d*x))*(c + d*x))/(2*d^4) - (b^2*(b*c - a*d)*e^2*
E^(e/(c + d*x))*(c + d*x))/(2*d^4) + (3*b*(b*c - a*d)^2*E^(e/(c +
 d*x))*(c + d*x)^2)/(2*d^4) - (b^2*(b*c - a*d)*e*E^(e/(c + d*x))*
(c + d*x)^2)/(2*d^4) - (b^2*(b*c - a*d)*E^(e/(c + d*x))*(c + d*x)
^3)/d^4 + ((b*c - a*d)^3*e*ExpIntegralEi[e/(c + d*x)])/d^4 - (3*b
*(b*c - a*d)^2*e^2*ExpIntegralEi[e/(c + d*x)])/(2*d^4) + (b^2*(b*
c - a*d)*e^3*ExpIntegralEi[e/(c + d*x)])/(2*d^4) + (b^3*e^4*Gamma
[-4, -(e/(c + d*x))])/d^4
```

Rubi in Sympy [A] time = 64.4075, size = 282, normalized size = 0.88

$$\frac{b^3e^4\left(-4,-\frac{e}{c+dx}\right)}{d^4}-\frac{b^2e^3\,(ad-bc)\,\text{Ei}\left(\frac{e}{c+dx}\right)}{2d^4}+\frac{b^2e^2\,(c+dx)\,(ad-bc)\,e^{\frac{e}{c+dx}}}{2d^4}+\frac{b^2e\,(c+dx)^2\,(ad-bc)\,e^{\frac{e}{c+dx}}}{2d^4}+\frac{b^2\,(c+dx)^3\,(ad-bc)\,e^{\frac{e}{c+dx}}}{d^4}-\frac{3be^2\,(ad-bc)^2\,\text{Ei}\left(\frac{e}{c+dx}\right)}{2d^4}+\frac{3be\,(c+dx)\,(ad-bc)^2\,e^{\frac{e}{c+dx}}}{2d^4}+\frac{3b\,(c+dx)^2\,(ad-bc)^2\,e^{\frac{e}{c+dx}}}{2d^4}-\frac{e\,(ad-bc)^3\,\text{Ei}\left(\frac{e}{c+dx}\right)}{d^4}+\frac{(c+dx)\,(ad-bc)^3\,e^{\frac{e}{c+dx}}}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))*(b*x+a)**3,x)
```

```
[Out] b**3*e**4*Gamma(-4, -e/(c + d*x))/d**4 - b**2*e**3*(a*d - b*c)*Ei
(e/(c + d*x))/(2*d**4) + b**2*e**2*(c + d*x)*(a*d - b*c)*exp(e/(c
 + d*x))/(2*d**4) + b**2*e*(c + d*x)**2*(a*d - b*c)*exp(e/(c + d*
x))/(2*d**4) + b**2*(c + d*x)**3*(a*d - b*c)*exp(e/(c + d*x))/d**
4 - 3*b*e**2*(a*d - b*c)**2*Ei(e/(c + d*x))/(2*d**4) + 3*b*e*(c +
 d*x)*(a*d - b*c)**2*exp(e/(c + d*x))/(2*d**4) + 3*b*(c + d*x)**2
*(a*d - b*c)**2*exp(e/(c + d*x))/(2*d**4) - e*(a*d - b*c)**3*Ei(e
/(c + d*x))/d**4 + (c + d*x)*(a*d - b*c)**3*exp(e/(c + d*x))/d**4
```

Mathematica [A] time = 0.376917, size = 292, normalized size = 0.91

$$\frac{dxe^{\frac{e}{c+dx}}\left(24a^3d^3+36a^2bd^2(dx+e)+12ab^2d\left(-4ce+2d^2x^2+dex+e^2\right)+b^3\left(18c^2e-2ce(3dx+5e)+6d^3x^3+2d^2ex^2+de\right.\right.}{24}$$
$$-\frac{ce^{\frac{e}{c+dx}}\left(-24a^3d^3+36a^2bd^2(c-e)-12ab^2d\left(2c^2-5ce+e^2\right)+b^3\left(6c^3-26c^2e+11ce^2-e^3\right)\right)}{24d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x))*(a + b*x)^3,x]
```

```
[Out] -(c*(-24*a^3*d^3 + 36*a^2*b*d^2*(c - e) - 12*a*b^2*d*(2*c^2 - 5*c
*e + e^2) + b^3*(6*c^3 - 26*c^2*e + 11*c*e^2 - e^3))*E^(e/(c + d*
x)))/(24*d^4) + (d*E^(e/(c + d*x))*x*(24*a^3*d^3 + 36*a^2*b*d^2*(
e + d*x) + 12*a*b^2*d*(-4*c*e + e^2 + d*e*x + 2*d^2*x^2) + b^3*(1
8*c^2*e + e^3 + d*e^2*x + 2*d^2*e*x^2 + 6*d^3*x^3 - 2*c*e*(5*e +
3*d*x))) - e*(24*a^3*d^3 + 36*a^2*b*d^2*(-2*c + e) + 12*a*b^2*d*(
6*c^2 - 6*c*e + e^2) + b^3*(-24*c^3 + 36*c^2*e - 12*c*e^2 + e^3))
*ExpIntegralEi[e/(c + d*x)])/(24*d^4)
```

Maple [B] time = 0.013, size = 682, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c))*(b*x+a)^3,x)
```

```
[Out] -1/d*e*(a^3*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))+b^3/d^3*
e^3*(-1/4*(d*x+c)^4/e^4*exp(e/(d*x+c))-1/12*(d*x+c)^3/e^3*exp(e/(
d*x+c))-1/24*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/24*(d*x+c)/e*exp(e/(d
*x+c))-1/24*Ei(1,-e/(d*x+c)))-b^3/d^3*c^3*(-(d*x+c)/e*exp(e/(d*x+
c))-Ei(1,-e/(d*x+c)))+3*b^2/d^2*e^2*a*(-1/3*(d*x+c)^3/e^3*exp(e/(
d*x+c))-1/6*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/6*(d*x+c)/e*exp(e/(d*x
+c))-1/6*Ei(1,-e/(d*x+c)))-3*b^3/d^3*e^2*c*(-1/3*(d*x+c)^3/e^3*ex
p(e/(d*x+c))-1/6*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/6*(d*x+c)/e*exp(e
/(d*x+c))-1/6*Ei(1,-e/(d*x+c)))+3*b/d*e*a^2*(-1/2*exp(e/(d*x+c))*
(d*x+c)^2/e^2-1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c)))+
3*b^3/d^3*e*c^2*(-1/2*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/2*(d*x+c)/e*
exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c)))-3*b/d*c*a^2*(-(d*x+c)/e*exp(
e/(d*x+c))-Ei(1,-e/(d*x+c)))+3*b^2/d^2*c^2*a*(-(d*x+c)/e*exp(e/(d
*x+c))-Ei(1,-e/(d*x+c)))-6*b^2/d^2*e*c*a*(-1/2*exp(e/(d*x+c))*(d*
x+c)^2/e^2-1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(6\,b^3d^3x^4 + 2\left(12\,ab^2d^3 + b^3d^2e\right)x^3 + \left(36\,a^2bd^3 + 12\,ab^2d^2e - \left(6\,cde - de^2\right)b^3\right)x^2 + \left(24\,a^3d^3 + 36\,a^2bd^2e - 12\left(4\,cde - de^2\right.\right.}{24\,d^3}$$

$$+\int -\frac{\left(36\,a^2bc^2d^2e - 12\left(4\,c^3de - c^2de^2\right)ab^2 + \left(18\,c^4e - 10\,c^3e^2 + c^2e^3\right)b^3 - \left(24\,a^3d^4e - 36\left(2\,cd^3e - d^3e^2\right)a^2b + 12\left(6\,c^2d^2e - \right.\right.\right.}{24\left(d^5x^2 + 2\,cd^4x + c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/24*(6*b^3*d^3*x^4 + 2*(12*a*b^2*d^3 + b^3*d^2*e)*x^3 + (36*a^2*
b*d^3 + 12*a*b^2*d^2*e - (6*c*d*e - d*e^2)*b^3)*x^2 + (24*a^3*d^3
 + 36*a^2*b*d^2*e - 12*(4*c*d*e - d*e^2)*a*b^2 + (18*c^2*e - 10*c
*e^2 + e^3)*b^3)*x)*e^(e/(d*x + c))/d^3 + integrate(-1/24*(36*a^2
*b*c^2*d^2*e - 12*(4*c^3*d*e - c^2*d*e^2)*a*b^2 + (18*c^4*e - 10*
c^3*e^2 + c^2*e^3)*b^3 - (24*a^3*d^4*e - 36*(2*c*d^3*e - d^3*e^2)
*a^2*b + 12*(6*c^2*d^2*e - 6*c*d^2*e^2 + d^2*e^3)*a*b^2 - (24*c^3
*d*e - 36*c^2*d*e^2 + 12*c*d*e^3 - d*e^4)*b^3)*x)*e^(e/(d*x + c))
/(d^5*x^2 + 2*c*d^4*x + c^2*d^3), x)
```

Fricas [A] time = 0.267553, size = 509, normalized size = 1.59

$$-\frac{\left(b^3e^4 - 12\left(b^3c - ab^2d\right)e^3 + 36\left(b^3c^2 - 2\,ab^2cd + a^2bd^2\right)e^2 - 24\left(b^3c^3 - 3\,ab^2c^2d + 3\,a^2bcd^2 - a^3d^3\right)e\right)\mathrm{Ei}\left(\frac{e}{dx+c}\right) - \left(6\,b^3d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/24*((b^3*e^4 - 12*(b^3*c - a*b^2*d)*e^3 + 36*(b^3*c^2 - 2*a*b^
2*c*d + a^2*b*d^2)*e^2 - 24*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*
d^2 - a^3*d^3)*e)*Ei(e/(d*x + c)) - (6*b^3*d^4*x^4 - 6*b^3*c^4 +
24*a*b^2*c^3*d - 36*a^2*b*c^2*d^2 + 24*a^3*c*d^3 + b^3*c*e^3 + 2*
(12*a*b^2*d^4 + b^3*d^3*e)*x^3 - (11*b^3*c^2 - 12*a*b^2*c*d)*e^2
+ (36*a^2*b*d^4 + b^3*d^2*e^2 - 6*(b^3*c*d^2 - 2*a*b^2*d^3)*e)*x^
2 + 2*(13*b^3*c^3 - 30*a*b^2*c^2*d + 18*a^2*b*c*d^2)*e + (24*a^3*
d^4 + b^3*d*e^3 - 2*(5*b^3*c*d - 6*a*b^2*d^2)*e^2 + 6*(3*b^3*c^2*
d - 8*a*b^2*c*d^2 + 6*a^2*b*d^3)*e)*x)*e^(e/(d*x + c)))/d^4
```

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

$$\int (a + bx)^3 e^{\frac{e}{c+dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c))*(b*x+a)**3,x)
```

```
[Out] Integral((a + b*x)**3*exp(e/(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^3 e^{\left(\frac{e}{dx+c}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((b*x + a)^3*e^(e/(d*x + c)), x)
```

3.403 $\int e^{\frac{e}{c+dx}}(a+bx)^2\,dx$

Optimal. Leaf size=255

$$\frac{be^2(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^3}-\frac{e(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^3}-\frac{be(c+dx)(bc-ad)e^{\frac{e}{c+dx}}}{d^3}-\frac{b(c+dx)^2(bc-ad)e^{\frac{e}{c+dx}}}{d^3}+\frac{(c+dx)(bc-ad)^2e^{\frac{e}{c+dx}}}{d^3}-\frac{b^2e^3\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{6d^3}+\frac{b^2e^2(c+dx)e^{\frac{e}{c+dx}}}{6d^3}+\frac{b^2e(c+dx)^2e^{\frac{e}{c+dx}}}{6d^3}+\frac{b^2(c+dx)^3e^{\frac{e}{c+dx}}}{3d^3}$$

```
[Out] ((b*c - a*d)^2*E^(e/(c + d*x))*(c + d*x))/d^3 - (b*(b*c - a*d)*e*
E^(e/(c + d*x))*(c + d*x))/d^3 + (b^2*e^2*E^(e/(c + d*x))*(c + d*
x))/(6*d^3) - (b*(b*c - a*d)*E^(e/(c + d*x))*(c + d*x)^2)/d^3 + (
b^2*e*E^(e/(c + d*x))*(c + d*x)^2)/(6*d^3) + (b^2*E^(e/(c + d*x))
*(c + d*x)^3)/(3*d^3) - ((b*c - a*d)^2*e*ExpIntegralEi[e/(c + d*x
)])/d^3 + (b*(b*c - a*d)*e^2*ExpIntegralEi[e/(c + d*x)])/d^3 - (b
^2*e^3*ExpIntegralEi[e/(c + d*x)])/(6*d^3)
```

Rubi [A] time = 0.440873, antiderivative size = 255, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{be^2(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^3}-\frac{e(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^3}-\frac{be(c+dx)(bc-ad)e^{\frac{e}{c+dx}}}{d^3}-\frac{b(c+dx)^2(bc-ad)e^{\frac{e}{c+dx}}}{d^3}+\frac{(c+dx)(bc-ad)^2e^{\frac{e}{c+dx}}}{d^3}-\frac{b^2e^3\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{6d^3}+\frac{b^2e^2(c+dx)e^{\frac{e}{c+dx}}}{6d^3}+\frac{b^2e(c+dx)^2e^{\frac{e}{c+dx}}}{6d^3}+\frac{b^2(c+dx)^3e^{\frac{e}{c+dx}}}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))*(a + b*x)^2,x]
```

```
[Out] ((b*c - a*d)^2*E^(e/(c + d*x))*(c + d*x))/d^3 - (b*(b*c - a*d)*e*
E^(e/(c + d*x))*(c + d*x))/d^3 + (b^2*e^2*E^(e/(c + d*x))*(c + d*
x))/(6*d^3) - (b*(b*c - a*d)*E^(e/(c + d*x))*(c + d*x)^2)/d^3 + (
b^2*e*E^(e/(c + d*x))*(c + d*x)^2)/(6*d^3) + (b^2*E^(e/(c + d*x))
*(c + d*x)^3)/(3*d^3) - ((b*c - a*d)^2*e*ExpIntegralEi[e/(c + d*x
)])/d^3 + (b*(b*c - a*d)*e^2*ExpIntegralEi[e/(c + d*x)])/d^3 - (b
^2*e^3*ExpIntegralEi[e/(c + d*x)])/(6*d^3)
```

Rubi in Sympy [A] time = 44.8452, size = 219, normalized size = 0.86

$$-\frac{b^2e^3\,\text{Ei}\left(\frac{e}{c+dx}\right)}{6d^3}+\frac{b^2e^2\,(c+dx)\,e^{\frac{e}{c+dx}}}{6d^3}+\frac{b^2e\,(c+dx)^2\,e^{\frac{e}{c+dx}}}{6d^3}+\frac{b^2\,(c+dx)^3\,e^{\frac{e}{c+dx}}}{3d^3}-\frac{be^2\,(ad-bc)\,\text{Ei}\left(\frac{e}{c+dx}\right)}{d^3}+\frac{be\,(c+dx)\,(ad-bc)\,e^{\frac{e}{c+dx}}}{d^3}+\frac{b\,(c+dx)^2\,(ad-bc)\,e^{\frac{e}{c+dx}}}{d^3}-\frac{e\,(ad-bc)^2\,\text{Ei}\left(\frac{e}{c+dx}\right)}{d^3}+\frac{(c+dx)\,(ad-bc)^2\,e^{\frac{e}{c+dx}}}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))*(b*x+a)**2,x)
```

```
[Out] -b**2*e**3*Ei(e/(c + d*x))/(6*d**3) + b**2*e**2*(c + d*x)*exp(e/(
c + d*x))/(6*d**3) + b**2*e*(c + d*x)**2*exp(e/(c + d*x))/(6*d**3
) + b**2*(c + d*x)**3*exp(e/(c + d*x))/(3*d**3) - b*e**2*(a*d - b
*c)*Ei(e/(c + d*x))/d**3 + b*e*(c + d*x)*(a*d - b*c)*exp(e/(c + d
```

```
*x))/d**3 + b*(c + d*x)**2*(a*d - b*c)*exp(e/(c + d*x))/d**3 - e*
(a*d - b*c)**2*Ei(e/(c + d*x))/d**3 + (c + d*x)*(a*d - b*c)**2*ex
p(e/(c + d*x))/d**3
```

Mathematica [A] time = 0.221249, size = 170, normalized size = 0.67

$$\frac{dxe^{\frac{e}{c+dx}}\left(6a^2d^2+6abd(dx+e)+b^2\left(-4ce+2d^2x^2+dex+e^2\right)\right)-e\left(6a^2d^2+6abd(e-2c)+b^2\left(6c^2-6ce+e^2\right)\right)\text{ExpInteg}}{6d^3}$$
$$+\frac{ce^{\frac{e}{c+dx}}\left(6a^2d^2+6abd(e-c)+b^2\left(2c^2-5ce+e^2\right)\right)}{6d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x))*(a + b*x)^2,x]
```

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

Maple [A] time = 0.012, size = 356, normalized size = 1.4

$$-\frac{e}{d}\left(a^2\left(-\frac{dx+c}{e}e^{\frac{e}{dx+c}}-Ei\left(1,-\frac{e}{dx+c}\right)\right)+\frac{b^2e^2}{d^2}\left(-\frac{(dx+c)^3}{3\,e^3}e^{\frac{e}{dx+c}}-\frac{(dx+c)^2}{6\,e^2}e^{\frac{e}{dx+c}}-\frac{dx+c}{6\,e}e^{\frac{e}{dx+c}}-\frac{1}{6}Ei\left(1,-\frac{e}{dx+c}\right)\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c))*(b*x+a)^2,x)
```

```
[Out] -1/d*e*(a^2*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))+b^2/d^2*
e^2*(-1/3*(d*x+c)^3/e^3*exp(e/(d*x+c))-1/6*exp(e/(d*x+c))*(d*x+c)
^2/e^2-1/6*(d*x+c)/e*exp(e/(d*x+c))-1/6*Ei(1,-e/(d*x+c)))+b^2/d^2
*c^2*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))+2*b/d*e*a*(-1/2
*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*Ei
(1,-e/(d*x+c)))-2*b^2/d^2*e*c*(-1/2*exp(e/(d*x+c))*(d*x+c)^2/e^2-
1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*Ei(1,-e/(d*x+c)))-2*b/d*c*a*(-(d
*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(2\,b^2d^2x^3+\left(6\,abd^2+b^2de\right)x^2+\left(6\,a^2d^2+6\,abde-\left(4\,ce-e^2\right)b^2\right)x\right)e^{\left(\frac{e}{dx+c}\right)}}{6\,d^2}+\int-\frac{\left(6\,abc^2de-\left(4\,c^3e-c^2e^2\right)b^2-\left(6\,a^2d^3e-6\left(2\,cd^2e-d^2e^2\right)ab+\left(6\,c^2de-6\,cde^2+de^3\right)b^2\right)x\right)e^{\left(\frac{e}{dx+c}\right)}}{6\left(d^4x^2+2\,cd^3x+c^2d^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(2*b^2*d^2*x^3 + (6*a*b*d^2 + b^2*d*e)*x^2 + (6*a^2*d^2 + 6*a
*b*d*e - (4*c*e - e^2)*b^2)*x)*e^(e/(d*x + c))/d^2 + integrate(-1
/6*(6*a*b*c^2*d*e - (4*c^3*e - c^2*e^2)*b^2 - (6*a^2*d^3*e - 6*(2
*c*d^2*e - d^2*e^2)*a*b + (6*c^2*d*e - 6*c*d*e^2 + d*e^3)*b^2)*x)
*e^(e/(d*x + c))/(d^4*x^2 + 2*c*d^3*x + c^2*d^2), x)
```

Fricas [A] time = 0.265531, size = 266, normalized size = 1.04

$$-\frac{\left(b^2e^3-6\left(b^2c-abd\right)e^2+6\left(b^2c^2-2\,abcd+a^2d^2\right)e\right)\mathrm{Ei}\left(\frac{e}{dx+c}\right)-\left(2\,b^2d^3x^3+2\,b^2c^3-6\,abc^2d+6\,a^2cd^2+b^2ce^2+\left(6\,abd^3\right.\right.}{6\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (a+bx)^2\,e^{\frac{e}{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c))*(b*x+a)**2,x)
```

```
[Out] Integral((a + b*x)**2*exp(e/(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^2 e^{\left(\frac{e}{dx+c}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)^2*e^(e/(d*x + c)), x)
```

3.404 $\int e^{\frac{e}{c+dx}}(a+bx)\,dx$

Optimal. Leaf size=125

$$\frac{e(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^2}-\frac{(c+dx)(bc-ad)e^{\frac{e}{c+dx}}}{d^2}-\frac{be^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^2}+\frac{be(c+dx)e^{\frac{e}{c+dx}}}{2d^2}+\frac{b(c+dx)^2e^{\frac{e}{c+dx}}}{2d^2}$$

```
[Out] -(((b*c - a*d)*E^(e/(c + d*x))*(c + d*x))/d^2) + (b*e*E^(e/(c + d
*x))*(c + d*x))/(2*d^2) + (b*E^(e/(c + d*x))*(c + d*x)^2)/(2*d^2)
 + ((b*c - a*d)*e*ExpIntegralEi[e/(c + d*x)])/d^2 - (b*e^2*ExpInt
egralEi[e/(c + d*x)])/(2*d^2)
```

Rubi [A] time = 0.220712, antiderivative size = 125, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{e(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d^2}-\frac{(c+dx)(bc-ad)e^{\frac{e}{c+dx}}}{d^2}-\frac{be^2\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^2}+\frac{be(c+dx)e^{\frac{e}{c+dx}}}{2d^2}+\frac{b(c+dx)^2e^{\frac{e}{c+dx}}}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))*(a + b*x),x]
```

```
[Out] -(((b*c - a*d)*E^(e/(c + d*x))*(c + d*x))/d^2) + (b*e*E^(e/(c + d
*x))*(c + d*x))/(2*d^2) + (b*E^(e/(c + d*x))*(c + d*x)^2)/(2*d^2)
 + ((b*c - a*d)*e*ExpIntegralEi[e/(c + d*x)])/d^2 - (b*e^2*ExpInt
egralEi[e/(c + d*x)])/(2*d^2)
```

Rubi in Sympy [A] time = 19.8111, size = 105, normalized size = 0.84

$$-\frac{be^2\operatorname{Ei}\left(\frac{e}{c+dx}\right)}{2d^2}+\frac{be\left(c+dx\right)e^{\frac{e}{c+dx}}}{2d^2}+\frac{b\left(c+dx\right)^2e^{\frac{e}{c+dx}}}{2d^2}-\frac{e\left(ad-bc\right)\operatorname{Ei}\left(\frac{e}{c+dx}\right)}{d^2}+\frac{\left(c+dx\right)\left(ad-bc\right)e^{\frac{e}{c+dx}}}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))*(b*x+a),x)
```

```
[Out] -b*e**2*Ei(e/(c + d*x))/(2*d**2) + b*e*(c + d*x)*exp(e/(c + d*x))
/(2*d**2) + b*(c + d*x)**2*exp(e/(c + d*x))/(2*d**2) - e*(a*d - b
*c)*Ei(e/(c + d*x))/d**2 + (c + d*x)*(a*d - b*c)*exp(e/(c + d*x))
/d**2
```

Mathematica [A] time = 0.111291, size = 91, normalized size = 0.73

$$\frac{dxe^{\frac{e}{c+dx}}(2ad+b(dx+e))-e(2ad+b(e-2c))\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{2d^2}+\frac{ce^{\frac{e}{c+dx}}(2ad+b(e-c))}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x))*(a + b*x),x]
```

```
[Out] (c*(2*a*d + b*(-c + e))*E^(e/(c + d*x)))/(2*d^2) + (d*E^(e/(c + d
*x))*x*(2*a*d + b*(e + d*x)) - e*(2*a*d + b*(-2*c + e))*ExpIntegr
alEi[e/(c + d*x)])/(2*d^2)
```

Maple [A] time = 0.007, size = 150, normalized size = 1.2

$$-\frac{e}{d}\left(a\left(-\frac{dx+c}{e}e^{\frac{e}{dx+c}}-Ei\left(1,-\frac{e}{dx+c}\right)\right)+\frac{be}{d}\left(-\frac{(dx+c)^2}{2e^2}e^{\frac{e}{dx+c}}-\frac{dx+c}{2e}e^{\frac{e}{dx+c}}-\frac{1}{2}Ei\left(1,-\frac{e}{dx+c}\right)\right)-\frac{cb}{d}\left(-\frac{dx+c}{e}e^{\frac{e}{dx+c}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(e/(d*x+c))*(b*x+a),x)
```

```
[Out] -1/d*e*(a*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))+b/d*e*(-1/
2*exp(e/(d*x+c))*(d*x+c)^2/e^2-1/2*(d*x+c)/e*exp(e/(d*x+c))-1/2*E
i(1,-e/(d*x+c)))-b/d*c*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)
)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(bdx^2+(2\,ad+be)x\right)e^{\left(\frac{e}{dx+c}\right)}}{2\,d}+\int -\frac{\left(bc^2e-\left(2\,ad^2e-\left(2\,cde-de^2\right)b\right)x\right)e^{\left(\frac{e}{dx+c}\right)}}{2\,(d^3x^2+2\,cd^2x+c^2d)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*d*x^2 + (2*a*d + b*e)*x)*e^(e/(d*x + c))/d + integrate(-1/
2*(b*c^2*e - (2*a*d^2*e - (2*c*d*e - d*e^2)*b)*x)*e^(e/(d*x + c))
/(d^3*x^2 + 2*c*d^2*x + c^2*d), x)
```

Fricas [A] time = 0.272701, size = 112, normalized size = 0.9

$$-\frac{\left(be^2-2\,(bc-ad)e\right)\mathrm{Ei}\left(\frac{e}{dx+c}\right)-\left(bd^2x^2-bc^2+2\,acd+bce+\left(2\,ad^2+bde\right)x\right)e^{\left(\frac{e}{dx+c}\right)}}{2\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int (a+bx)\,e^{\frac{e}{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(e/(d*x+c))*(b*x+a),x)
```

```
[Out] Integral((a + b*x)*exp(e/(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)e^{\left(\frac{e}{dx+c}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)*e^(e/(d*x + c)), x)
```

3.405 $\int e^{\frac{e}{c+dx}}\,dx$

Optimal. Leaf size=37

$$\frac{(c+dx)e^{\frac{e}{c+dx}}}{d}-\frac{e\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d}$$

```
[Out] (E^(e/(c + d*x))*(c + d*x))/d - (e*ExpIntegralEi[e/(c + d*x)])/d
```

Rubi [A] time = 0.0519313, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{(c+dx)e^{\frac{e}{c+dx}}}{d}-\frac{e\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)),x]

[Out] (E^(e/(c + d*x))*(c + d*x))/d - (e*ExpIntegralEi[e/(c + d*x)])/d
```

Rubi in Sympy [A] time = 5.85324, size = 26, normalized size = 0.7

$$-\frac{e\operatorname{Ei}\left(\frac{e}{c+dx}\right)}{d}+\frac{(c+dx)\,e^{\frac{e}{c+dx}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)),x)

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

Mathematica [A] time = 0.0122749, size = 37, normalized size = 1.

$$\frac{(c+dx)e^{\frac{e}{c+dx}}}{d}-\frac{e\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)),x]

[Out] (E^(e/(c + d*x))*(c + d*x))/d - (e*ExpIntegralEi[e/(c + d*x)])/d
```

Maple [A] time = 0.006, size = 42, normalized size = 1.1

$$-\frac{e}{d}\left(-\frac{dx+c}{e}\mathrm{e}^{\frac{e}{dx+c}}-Ei\left(1,-\frac{e}{dx+c}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/d*e*(-(d*x+c)/e*exp(e/(d*x+c))-Ei(1,-e/(d*x+c)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$de\int \frac{xe^{\left(\frac{e}{dx+c}\right)}}{d^2x^2 + 2\,cdx + c^2}\,dx + xe^{\left(\frac{e}{dx+c}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] d*e*integrate(x*e^(e/(d*x + c))/(d^2*x^2 + 2*c*d*x + c^2), x) + x
*e^(e/(d*x + c))
```

Fricas [A] time = 0.254495, size = 47, normalized size = 1.27

$$-\frac{e\mathrm{Ei}\left(\frac{e}{dx+c}\right) - (dx+c)e^{\left(\frac{e}{dx+c}\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int e^{\frac{e}{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(exp(e/(c + d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\frac{e}{dx+c}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c)), x)
```

3.406 $\int \frac{e^{\frac{e}{c+dx}}}{a+bx}\,dx$

Optimal. Leaf size=62

$$\frac{e^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{b}-\frac{\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{b}$$

```
[Out] -(ExpIntegralEi[e/(c + d*x)]/b) + (E^((b*e)/(b*c - a*d))*ExpInteg
ralEi[-((d*e*(a + b*x))/((b*c - a*d)*(c + d*x)))])/b
```

Rubi [A] time = 0.310957, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{e^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{b}-\frac{\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))/(a + b*x),x]
```

```
[Out] -(ExpIntegralEi[e/(c + d*x)]/b) + (E^((b*e)/(b*c - a*d))*ExpInteg
ralEi[-((d*e*(a + b*x))/((b*c - a*d)*(c + d*x)))])/b
```

Rubi in Sympy [A] time = 25.1949, size = 44, normalized size = 0.71

$$-\frac{\text{Ei}\left(\frac{e}{c+dx}\right)}{b}+\frac{e^{-\frac{be}{ad-bc}}\text{ Ei}\left(\frac{de(a+bx)}{(c+dx)(ad-bc)}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))/(b*x+a),x)
```

```
[Out] -Ei(e/(c + d*x))/b + exp(-b*e/(a*d - b*c))*Ei(d*e*(a + b*x)/((c +
 d*x)*(a*d - b*c)))/b
```

Mathematica [A] time = 0.0495554, size = 56, normalized size = 0.9

$$\frac{e^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(e\left(\frac{b}{ad-bc}+\frac{1}{c+dx}\right)\right)-\text{ExpIntegralEi}\left(\frac{e}{c+dx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x))/(a + b*x),x]
```

```
[Out] (-ExpIntegralEi[e/(c + d*x)] + E^((b*e)/(b*c - a*d))*ExpIntegralE
i[e*(b/(-(b*c) + a*d) + (c + d*x)^(-1))])/b
```

Maple [A] time = 0.016, size = 79, normalized size = 1.3

$$-\frac{e}{d}\left(-\frac{d}{be}Ei\left(1,-\frac{e}{dx+c}\right)+\frac{d}{be}e^{-\frac{be}{ad-cb}}Ei\left(1,-\frac{e}{dx+c}-\frac{be}{ad-cb}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(exp(e/(d*x+c))/(b*x+a),x)
```

```
[Out] -1/d*e*(-d/b/e*Ei(1,-e/(d*x+c))+1/b/e*d*exp(-b*e/(a*d-b*c))*Ei(1,
-e/(d*x+c)-b*e/(a*d-b*c)))
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{dx+c}\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c))/(b*x + a), x)
```

Fricas [A]   time = 0.255409, size = 96, normalized size = 1.55

$$\frac{\mathrm{Ei}\left(-\frac{bdex+ade}{bc^2-acd+(bcd-ad^2)x}\right)e^{\left(\frac{be}{bc-ad}\right)}-\mathrm{Ei}\left(\frac{e}{dx+c}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{e^{\frac{e}{c+dx}}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(exp(e/(d*x+c))/(b*x+a),x)
```

```
[Out] Integral(exp(e/(c + d*x))/(a + b*x), x)
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{dx+c}\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c))/(b*x + a), x)
```

3.407 $\int \frac{e^{\frac{e}{c+dx}}}{(a+bx)^2} dx$

Optimal. Leaf size=107

$$-\frac{dee^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{(bc-ad)^2}-\frac{de^{\frac{e}{c+dx}}}{b(bc-ad)}-\frac{e^{\frac{e}{c+dx}}}{b(a+bx)}$$

```
[Out] -((d*E^(e/(c + d*x)))/(b*(b*c - a*d))) - E^(e/(c + d*x))/(b*(a +
b*x)) - (d*e*E^((b*e)/(b*c - a*d))*ExpIntegralEi[-((d*e*(a + b*x)
)/((b*c - a*d)*(c + d*x)))])/(b*c - a*d)^2
```

Rubi [A] time = 0.854659, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368

$$-\frac{dee^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{(bc-ad)^2}-\frac{de^{\frac{e}{c+dx}}}{b(bc-ad)}-\frac{e^{\frac{e}{c+dx}}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))/(a + b*x)^2,x]
```

```
[Out] -((d*E^(e/(c + d*x)))/(b*(b*c - a*d))) - E^(e/(c + d*x))/(b*(a +
b*x)) - (d*e*E^((b*e)/(b*c - a*d))*ExpIntegralEi[-((d*e*(a + b*x)
)/((b*c - a*d)*(c + d*x)))])/(b*c - a*d)^2
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))/(b*x+a)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.13397, size = 105, normalized size = 0.98

$$-\frac{dee^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(\frac{e}{c+dx}-\frac{be}{bc-ad}\right)}{(ad-bc)^2}-\frac{de^{\frac{e}{c+dx}}}{b(bc-ad)}-\frac{e^{\frac{e}{c+dx}}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x))/(a + b*x)^2,x]
```

```
[Out] -((d*E^(e/(c + d*x)))/(b*(b*c - a*d))) - E^(e/(c + d*x))/(b*(a +
b*x)) - (d*e*E^((b*e)/(b*c - a*d))*ExpIntegralEi[-((b*e)/(b*c - a
*d)) + e/(c + d*x)])/(-(b*c) + a*d)^2
```

Maple [A] time = 0.013, size = 97, normalized size = 0.9

$$-\frac{ed}{(ad-cb)^2}\left(-1e^{\frac{e}{dx+c}}\left(\frac{e}{dx+c}+\frac{be}{ad-cb}\right)^{-1}-e^{-\frac{be}{ad-cb}}Ei\left(1,-\frac{e}{dx+c}-\frac{be}{ad-cb}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c))/(b*x+a)^2,x)
```

```
[Out] -d*e/(a*d-b*c)^2*(-exp(e/(d*x+c))/(e/(d*x+c)+b*e/(a*d-b*c))-exp(-
b*e/(a*d-b*c))*Ei(1,-e/(d*x+c)-b*e/(a*d-b*c)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{dx+c}\right)}}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c))/(b*x + a)^2, x)
```

Fricas [A] time = 0.256071, size = 208, normalized size = 1.94

$$-\frac{(bdex+ade)\mathrm{Ei}\left(-\frac{bdex+ade}{bc^2-acd+(bcd-ad^2)x}\right)e^{\left(\frac{be}{bc-ad}\right)}+\left(bc^2-acd+\left(bcd-ad^2\right)x\right)e^{\left(\frac{e}{dx+c}\right)}}{ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((b*d*e*x + a*d*e)*Ei(-(b*d*e*x + a*d*e)/(b*c^2 - a*c*d + (b*c*d
 - a*d^2)*x))*e^(b*e/(b*c - a*d)) + (b*c^2 - a*c*d + (b*c*d - a*d
^2)*x)*e^(e/(d*x + c)))/(a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3
*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*x)
```

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

$$\int \frac{e^{\frac{e}{c+dx}}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c))/(b*x+a)**2,x)
```

```
[Out] Integral(exp(e/(c + d*x))/(a + b*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$undef$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] undef
```

3.408 $\int \frac{e^{\frac{e}{c+dx}}}{(a+bx)^3} dx$

Optimal. Leaf size=240

$$\frac{bd^2e^2e^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{2(bc-ad)^4}+\frac{d^2ee^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{(bc-ad)^3}+\frac{d^2ee^{\frac{e}{c+dx}}}{2(bc-ad)^3}+\frac{d^2e^{\frac{e}{c+dx}}}{2b(bc-ad)^2}+\frac{dee^{\frac{e}{c+dx}}}{2(a+bx)(bc-ad)^2}-\frac{e^{\frac{e}{c+dx}}}{2b(a+bx)^2}$$

```
[Out] (d^2*E^(e/(c + d*x)))/(2*b*(b*c - a*d)^2) + (d^2*e*E^(e/(c + d*x)
))/(2*(b*c - a*d)^3) - E^(e/(c + d*x))/(2*b*(a + b*x)^2) + (d*e*E
^(e/(c + d*x)))/(2*(b*c - a*d)^2*(a + b*x)) + (d^2*e*E^((b*e)/(b*
c - a*d))*ExpIntegralEi[-((d*e*(a + b*x))/((b*c - a*d)*(c + d*x))
)])/(b*c - a*d)^3 + (b*d^2*e^2*E^((b*e)/(b*c - a*d))*ExpIntegralE
i[-((d*e*(a + b*x))/((b*c - a*d)*(c + d*x)))])/(2*(b*c - a*d)^4)
```

Rubi [A] time = 1.71362, antiderivative size = 240, normalized size of antiderivative = 1., number of steps used = 18, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368

$$\frac{bd^2e^2e^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{2(bc-ad)^4}+\frac{d^2ee^{\frac{be}{bc-ad}}\text{ExpIntegralEi}\left(-\frac{de(a+bx)}{(c+dx)(bc-ad)}\right)}{(bc-ad)^3}+\frac{d^2ee^{\frac{e}{c+dx}}}{2(bc-ad)^3}+\frac{d^2e^{\frac{e}{c+dx}}}{2b(bc-ad)^2}+\frac{dee^{\frac{e}{c+dx}}}{2(a+bx)(bc-ad)^2}-\frac{e^{\frac{e}{c+dx}}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x))/(a + b*x)^3,x]
```

```
[Out] (d^2*E^(e/(c + d*x)))/(2*b*(b*c - a*d)^2) + (d^2*e*E^(e/(c + d*x)
))/(2*(b*c - a*d)^3) - E^(e/(c + d*x))/(2*b*(a + b*x)^2) + (d*e*E
^(e/(c + d*x)))/(2*(b*c - a*d)^2*(a + b*x)) + (d^2*e*E^((b*e)/(b*
c - a*d))*ExpIntegralEi[-((d*e*(a + b*x))/((b*c - a*d)*(c + d*x))
)])/(b*c - a*d)^3 + (b*d^2*e^2*E^((b*e)/(b*c - a*d))*ExpIntegralE
i[-((d*e*(a + b*x))/((b*c - a*d)*(c + d*x)))])/(2*(b*c - a*d)^4)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c))/(b*x+a)**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.336642, size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{c+dx}}}{(a+bx)^3} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e/(c + d*x))/(a + b*x)^3,x]
```

```
[Out] Integrate[E^(e/(c + d*x))/(a + b*x)^3, x]
```

Maple [A] time = 0.013, size = 240, normalized size = 1.

$$-\frac{e}{d}\left(\frac{d^3}{(ad-cb)^3}\left(-1\mathrm{e}^{\frac{e}{dx+c}}\left(\frac{e}{dx+c}+\frac{be}{ad-cb}\right)^{-1}-\mathrm{e}^{-\frac{be}{ad-cb}}Ei\left(1,-\frac{e}{dx+c}-\frac{be}{ad-cb}\right)\right)-\frac{bed^3}{(ad-cb)^4}\left(-\frac{1}{2}\mathrm{e}^{\frac{e}{dx+c}}\left(\frac{e}{dx+c}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c))/(b*x+a)^3,x)
```

```
[Out] -1/d*e*(d^3/(a*d-b*c)^3*(-exp(e/(d*x+c))/(e/(d*x+c)+b*e/(a*d-b*c)
)-exp(-b*e/(a*d-b*c))*Ei(1,-e/(d*x+c)-b*e/(a*d-b*c)))-b*e/(a*d-b*
c)^4*d^3*(-1/2*exp(e/(d*x+c))/(e/(d*x+c)+b*e/(a*d-b*c))^2-1/2*exp
(e/(d*x+c))/(e/(d*x+c)+b*e/(a*d-b*c))-1/2*exp(-b*e/(a*d-b*c))*Ei(
1,-e/(d*x+c)-b*e/(a*d-b*c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{dx+c}\right)}}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c))/(b*x + a)^3, x)
```

Fricas [A] time = 0.256916, size = 698, normalized size = 2.91

$$\frac{\left(a^2bd^2e^2+\left(b^3d^2e^2+2\left(b^3cd^2-ab^2d^3\right)e\right)x^2+2\left(a^2bcd^2-a^3d^3\right)e+2\left(ab^2d^2e^2+2\left(ab^2cd^2-a^2bd^3\right)e\right)x\right)\mathrm{Ei}\left(-\frac{bdex+a}{bc^2-acd+(bc}\right.}{2\left(a^2b^4c^4-4a^3b^3c^3d+6a^4b^2c^2d^2-4a^5bcd^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{e^{\frac{e}{c+dx}}}{(a+bx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c))/(b*x+a)**3,x)

[Out] Integral(exp(e/(c + d*x))/(a + b*x)**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{dx+c}\right)}}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(e/(d*x + c))/(b*x + a)^3, x)
```

3.409 $\int e^{\frac{e}{(c+dx)^2}}(a+bx)^3\,dx$

Optimal. Leaf size=322

$$\frac{2\sqrt{\pi}b^2e^{3/2}(bc-ad)\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^4}-\frac{b^2(c+dx)^3(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^4}-\frac{2b^2e(c+dx)(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^4}+\frac{\sqrt{\pi}\sqrt{e}(bc-ad)^3\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^4}-\frac{3be(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{2d^4}+\frac{3b(c+dx)^2(bc-ad)^2e^{\frac{e}{(c+dx)^2}}}{2d^4}-\frac{(c+dx)(bc-ad)^3e^{\frac{e}{(c+dx)^2}}}{d^4}-\frac{b^3e^2\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{4d^4}+\frac{b^3(c+dx)^4e^{\frac{e}{(c+dx)^2}}}{4d^4}+\frac{b^3e(c+dx)^2e^{\frac{e}{(c+dx)^2}}}{4d^4}$$

```
[Out] -(((b*c - a*d)^3*E^(e/(c + d*x)^2)*(c + d*x))/d^4) - (2*b^2*(b*c
- a*d)*e*E^(e/(c + d*x)^2)*(c + d*x))/d^4 + (3*b*(b*c - a*d)^2*E^
(e/(c + d*x)^2)*(c + d*x)^2)/(2*d^4) + (b^3*e*E^(e/(c + d*x)^2)*(
c + d*x)^2)/(4*d^4) - (b^2*(b*c - a*d)*E^(e/(c + d*x)^2)*(c + d*x
)^3)/d^4 + (b^3*E^(e/(c + d*x)^2)*(c + d*x)^4)/(4*d^4) + ((b*c -
a*d)^3*Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/d^4 + (2*b^2*(b*
c - a*d)*e^(3/2)*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/d^4 - (3*b*(b*
c - a*d)^2*e*ExpIntegralEi[e/(c + d*x)^2])/(2*d^4) - (b^3*e^2*Exp
IntegralEi[e/(c + d*x)^2])/(4*d^4)
```

Rubi [A] time = 0.601621, antiderivative size = 322, normalized size of antiderivative = 1., number of steps used = 14, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$\frac{2\sqrt{\pi}b^2e^{3/2}(bc-ad)\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^4}-\frac{b^2(c+dx)^3(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^4}-\frac{2b^2e(c+dx)(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^4}+\frac{\sqrt{\pi}\sqrt{e}(bc-ad)^3\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^4}-\frac{3be(bc-ad)^2\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{2d^4}+\frac{3b(c+dx)^2(bc-ad)^2e^{\frac{e}{(c+dx)^2}}}{2d^4}-\frac{(c+dx)(bc-ad)^3e^{\frac{e}{(c+dx)^2}}}{d^4}-\frac{b^3e^2\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{4d^4}+\frac{b^3(c+dx)^4e^{\frac{e}{(c+dx)^2}}}{4d^4}+\frac{b^3e(c+dx)^2e^{\frac{e}{(c+dx)^2}}}{4d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)^2)*(a + b*x)^3,x]
```


```
[Out] -(((b*c - a*d)^3*E^(e/(c + d*x)^2)*(c + d*x))/d^4) - (2*b^2*(b*c
- a*d)*e*E^(e/(c + d*x)^2)*(c + d*x))/d^4 + (3*b*(b*c - a*d)^2*E^
(e/(c + d*x)^2)*(c + d*x)^2)/(2*d^4) + (b^3*e*E^(e/(c + d*x)^2)*(
c + d*x)^2)/(4*d^4) - (b^2*(b*c - a*d)*E^(e/(c + d*x)^2)*(c + d*x
)^3)/d^4 + (b^3*E^(e/(c + d*x)^2)*(c + d*x)^4)/(4*d^4) + ((b*c -
a*d)^3*Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/d^4 + (2*b^2*(b*
c - a*d)*e^(3/2)*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/d^4 - (3*b*(b*
c - a*d)^2*e*ExpIntegralEi[e/(c + d*x)^2])/(2*d^4) - (b^3*e^2*Exp
IntegralEi[e/(c + d*x)^2])/(4*d^4)
```

Rubi in Sympy [A] time = 66.527, size = 298, normalized size = 0.93

$$-\frac{b^3e^2\,\mathrm{Ei}\left(\frac{e}{(c+dx)^2}\right)}{4d^4}+\frac{b^3e(c+dx)^2e^{\frac{e}{(c+dx)^2}}}{4d^4}+\frac{b^3(c+dx)^4e^{\frac{e}{(c+dx)^2}}}{4d^4}-\frac{2\sqrt{\pi}b^2e^{\frac{3}{2}}(ad-bc)\,\mathrm{erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^4}+\frac{2b^2e(c+dx)(ad-bc)e^{\frac{e}{(c+dx)^2}}}{d^4}+\frac{b^2(c+dx)^3(ad-bc)e^{\frac{e}{(c+dx)^2}}}{d^4}-\frac{3be(ad-bc)^2\,\mathrm{Ei}\left(\frac{e}{(c+dx)^2}\right)}{2d^4}+\frac{3b(c+dx)^2(ad-bc)^2e^{\frac{e}{(c+dx)^2}}}{2d^4}-\frac{\sqrt{\pi}\sqrt{e}(ad-bc)^3\,\mathrm{erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^4}+\frac{(c+dx)(ad-bc)^3e^{\frac{e}{(c+dx)^2}}}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2)*(b*x+a)**3,x)
```

```
[Out] -b**3*e**2*Ei(e/(c + d*x)**2)/(4*d**4) + b**3*e*(c + d*x)**2*exp(
e/(c + d*x)**2)/(4*d**4) + b**3*(c + d*x)**4*exp(e/(c + d*x)**2)/
(4*d**4) - 2*sqrt(pi)*b**2*e**(3/2)*(a*d - b*c)*erfi(sqrt(e)/(c +
 d*x))/d**4 + 2*b**2*e*(c + d*x)*(a*d - b*c)*exp(e/(c + d*x)**2)/
d**4 + b**2*(c + d*x)**3*(a*d - b*c)*exp(e/(c + d*x)**2)/d**4 - 3
*b*e*(a*d - b*c)**2*Ei(e/(c + d*x)**2)/(2*d**4) + 3*b*(c + d*x)**
2*(a*d - b*c)**2*exp(e/(c + d*x)**2)/(2*d**4) - sqrt(pi)*sqrt(e)*
(a*d - b*c)**3*erfi(sqrt(e)/(c + d*x))/d**4 + (c + d*x)*(a*d - b*
c)**3*exp(e/(c + d*x)**2)/d**4
```

Mathematica [A] time = 0.355645, size = 243, normalized size = 0.75

$$\frac{4\sqrt{\pi}\sqrt{e}(bc-ad)\left(a^2d^2-2abcd+b^2\left(c^2+2e\right)\right)\mathrm{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)-be\left(6a^2d^2-12abcd+b^2\left(6c^2+e\right)\right)\mathrm{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)+}{4d^4}$$

$$-\frac{ce^{\frac{e}{(c+dx)^2}}\left(-4a^3d^3+6a^2bcd^2-4ab^2d\left(c^2+2e\right)+b^3\left(c^3+7ce\right)\right)}{4d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)^2)*(a + b*x)^3,x]
```

```
[Out] -(c*(6*a^2*b*c*d^2 - 4*a^3*d^3 - 4*a*b^2*d*(c^2 + 2*e) + b^3*(c^3
 + 7*c*e))*E^(e/(c + d*x)^2))/(4*d^4) + (d*E^(e/(c + d*x)^2)*x*(4
*a^3*d^3 + 6*a^2*b*d^3*x + 4*a*b^2*d*(2*e + d^2*x^2) + b^3*(-6*c*
e + d*e*x + d^3*x^3)) + 4*(b*c - a*d)*Sqrt[e]*(-2*a*b*c*d + a^2*d
^2 + b^2*(c^2 + 2*e))*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)] - b*e*(-12
*a*b*c*d + 6*a^2*d^2 + b^2*(6*c^2 + e))*ExpIntegralEi[e/(c + d*x)
^2])/(4*d^4)
```

Maple [A] time = 0.023, size = 560, normalized size = 1.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^2)*(b*x+a)^3,x)
```

```
[Out] -1/d*(a^3*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-
e)^(1/2)/(d*x+c)))+b^3/d^3*(-1/4*(d*x+c)^4*exp(e/(d*x+c)^2)+1/2*e
*(-1/2*exp(e/(d*x+c)^2)*(d*x+c)^2-1/2*e*Ei(1,-e/(d*x+c)^2)))+3*b^
2/d^2*a*(-1/3*(d*x+c)^3*exp(e/(d*x+c)^2)+2/3*e*(-(d*x+c)*exp(e/(d
*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)^(1/2)/(d*x+c))))-3*b^3/d^
3*c*(-1/3*(d*x+c)^3*exp(e/(d*x+c)^2)+2/3*e*(-(d*x+c)*exp(e/(d*x+c
```

```
)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)^(1/2)/(d*x+c))))+3*b/d*a^2*(-
1/2*exp(e/(d*x+c)^2)*(d*x+c)^2-1/2*e*Ei(1,-e/(d*x+c)^2))+3*b^3/d^
3*c^2*(-1/2*exp(e/(d*x+c)^2)*(d*x+c)^2-1/2*e*Ei(1,-e/(d*x+c)^2))-
b^3/d^3*c^3*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf(
(-e)^(1/2)/(d*x+c)))-6*b^2/d^2*c*a*(-1/2*exp(e/(d*x+c)^2)*(d*x+c)
^2-1/2*e*Ei(1,-e/(d*x+c)^2))-3*b/d*c*a^2*(-(d*x+c)*exp(e/(d*x+c)^
2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)^(1/2)/(d*x+c)))+3*b^2/d^2*c^2*a
*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)^(1/2)/
(d*x+c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^3d^3x^4 + 4\,ab^2d^3x^3 + \left(6\,a^2bd^3 + b^3de\right)x^2 + 2\left(2\,a^3d^3 - 3\,b^3ce + 4\,ab^2de\right)x\right)e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{4\,d^3} + \int \frac{\left(3\,b^3c^4e - 4\,ab^2c^3de - \left(12\,ab^2cd^3e - 6\,a^2bd^4e - \left(6\,c^2d^2e + d^2e^2\right)b^3\right)x^2 + 2\left(2\,a^3d^4e - 2\left(3\,c^2d^2e - 2\,d^2e^2\right)ab^2 + \left(4\,c^3de\right.\right.}{2\left(d^6x^3 + 3\,cd^5x^2 + 3\,c^2d^4x + c^3d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*e^(e/(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^3*d^3*x^4 + 4*a*b^2*d^3*x^3 + (6*a^2*b*d^3 + b^3*d*e)*x^2
+ 2*(2*a^3*d^3 - 3*b^3*c*e + 4*a*b^2*d*e)*x)*e^(e/(d^2*x^2 + 2*c*
d*x + c^2))/d^3 + integrate(1/2*(3*b^3*c^4*e - 4*a*b^2*c^3*d*e -
(12*a*b^2*c*d^3*e - 6*a^2*b*d^4*e - (6*c^2*d^2*e + d^2*e^2)*b^3)*
x^2 + 2*(2*a^3*d^4*e - 2*(3*c^2*d^2*e - 2*d^2*e^2)*a*b^2 + (4*c^3
*d*e - 3*c*d*e^2)*b^3)*x)*e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(d^6*x^
3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3), x)
```

Fricas [A] time = 0.283888, size = 450, normalized size = 1.4

$$\frac{4\sqrt{\pi}\left(2\left(b^3c - ab^2d\right)e^2 + \left(b^3c^3 - 3\,ab^2c^2d + 3\,a^2bcd^2 - a^3d^3\right)e\right)\operatorname{erf}\left(\frac{d\sqrt{-\frac{e}{d^2}}}{dx+c}\right) - \left(\left(b^3de^2 + 6\left(b^3c^2d - 2\,ab^2cd^2 + a^2bd^3\right)e\right)\mathrm{E}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*e^(e/(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(pi)*(2*(b^3*c - a*b^2*d)*e^2 + (b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*e)*erf(d*sqrt(-e/d^2)/(d*x + c)) -
((b^3*d*e^2 + 6*(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*e)*Ei(e/(
d^2*x^2 + 2*c*d*x + c^2)) - (b^3*d^5*x^4 + 4*a*b^2*d^5*x^3 - b^3*
c^4*d + 4*a*b^2*c^3*d^2 - 6*a^2*b*c^2*d^3 + 4*a^3*c*d^4 + (6*a^2*
b*d^5 + b^3*d^3*e)*x^2 - (7*b^3*c^2*d - 8*a*b^2*c*d^2)*e + 2*(2*a
^3*d^5 - (3*b^3*c*d^2 - 4*a*b^2*d^3)*e)*x)*e^(e/(d^2*x^2 + 2*c*d*
x + c^2)))*sqrt(-e/d^2))/(d^5*sqrt(-e/d^2))
```

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

$$\int (a + bx)^3\, e^{\frac{e}{c^2+2cdx+d^2x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**2)*(b*x+a)**3,x)
```

```
[Out] Integral((a + b*x)**3*exp(e/(c**2 + 2*c*d*x + d**2*x**2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^3 e^{\left(\frac{e}{(dx+c)^2}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*e^(e/(d*x + c)^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^3*e^(e/(d*x + c)^2), x)
```

3.410 $\int e^{\frac{e}{(c+dx)^2}}(a+bx)^2\,dx$

Optimal. Leaf size=215

$$-\frac{\sqrt{\pi}\sqrt{e}(bc-ad)^2\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^3}+\frac{be(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{d^3}-\frac{b(c+dx)^2(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^3}+\frac{(c+dx)(bc-ad)^2e^{\frac{e}{(c+dx)^2}}}{d^3}-\frac{2\sqrt{\pi}b^2e^{3/2}\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{3d^3}+\frac{b^2(c+dx)^3e^{\frac{e}{(c+dx)^2}}}{3d^3}+\frac{2b^2e(c+dx)e^{\frac{e}{(c+dx)^2}}}{3d^3}$$

```
[Out] ((b*c - a*d)^2*E^(e/(c + d*x)^2)*(c + d*x))/d^3 + (2*b^2*e*E^(e/(
c + d*x)^2)*(c + d*x))/(3*d^3) - (b*(b*c - a*d)*E^(e/(c + d*x)^2)
*(c + d*x)^2)/d^3 + (b^2*E^(e/(c + d*x)^2)*(c + d*x)^3)/(3*d^3) -
 ((b*c - a*d)^2*Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/d^3 - (
2*b^2*e^(3/2)*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/(3*d^3) + (b*(b*c
 - a*d)*e*ExpIntegralEi[e/(c + d*x)^2])/d^3
```

Rubi [A] time = 0.398264, antiderivative size = 215, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$-\frac{\sqrt{\pi}\sqrt{e}(bc-ad)^2\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^3}+\frac{be(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{d^3}-\frac{b(c+dx)^2(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^3}+\frac{(c+dx)(bc-ad)^2e^{\frac{e}{(c+dx)^2}}}{d^3}-\frac{2\sqrt{\pi}b^2e^{3/2}\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{3d^3}+\frac{b^2(c+dx)^3e^{\frac{e}{(c+dx)^2}}}{3d^3}+\frac{2b^2e(c+dx)e^{\frac{e}{(c+dx)^2}}}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)^2)*(a + b*x)^2,x]
```


```
[Out] ((b*c - a*d)^2*E^(e/(c + d*x)^2)*(c + d*x))/d^3 + (2*b^2*e*E^(e/(
c + d*x)^2)*(c + d*x))/(3*d^3) - (b*(b*c - a*d)*E^(e/(c + d*x)^2)
*(c + d*x)^2)/d^3 + (b^2*E^(e/(c + d*x)^2)*(c + d*x)^3)/(3*d^3) -
 ((b*c - a*d)^2*Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/d^3 - (
2*b^2*e^(3/2)*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)])/(3*d^3) + (b*(b*c
 - a*d)*e*ExpIntegralEi[e/(c + d*x)^2])/d^3
```

Rubi in Sympy [A] time = 43.9648, size = 197, normalized size = 0.92

$$-\frac{2\sqrt{\pi}b^2e^{\frac{3}{2}}\operatorname{erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{3d^3}+\frac{2b^2e\left(c+dx\right)e^{\frac{e}{(c+dx)^2}}}{3d^3}+\frac{b^2\left(c+dx\right)^3e^{\frac{e}{(c+dx)^2}}}{3d^3}-\frac{be\left(ad-bc\right)\operatorname{Ei}\left(\frac{e}{(c+dx)^2}\right)}{d^3}+\frac{b\left(c+dx\right)^2\left(ad-bc\right)e^{\frac{e}{(c+dx)^2}}}{d^3}-\frac{\sqrt{\pi}\sqrt{e}\left(ad-bc\right)^2\operatorname{erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^3}+\frac{\left(c+dx\right)\left(ad-bc\right)^2e^{\frac{e}{(c+dx)^2}}}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2)*(b*x+a)**2,x)
```

```
[Out] -2*sqrt(pi)*b**2*e**(3/2)*erfi(sqrt(e)/(c + d*x))/(3*d**3) + 2*b*
*2*e*(c + d*x)*exp(e/(c + d*x)**2)/(3*d**3) + b**2*(c + d*x)**3*e
xp(e/(c + d*x)**2)/(3*d**3) - b*e*(a*d - b*c)*Ei(e/(c + d*x)**2)/
d**3 + b*(c + d*x)**2*(a*d - b*c)*exp(e/(c + d*x)**2)/d**3 - sqrt
(pi)*sqrt(e)*(a*d - b*c)**2*erfi(sqrt(e)/(c + d*x))/d**3 + (c + d
*x)*(a*d - b*c)**2*exp(e/(c + d*x)**2)/d**3
```

Mathematica [A] time = 0.222596, size = 176, normalized size = 0.82

$$\frac{-\sqrt{\pi}\sqrt{e}\left(3a^2d^2-6abcd+b^2\left(3c^2+2e\right)\right)\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)+dxe^{\frac{e}{(c+dx)^2}}\left(3a^2d^2+3abd^2x+b^2\left(d^2x^2+2e\right)\right)+3be(bc-ad)\text{ExpInt}}{3d^3}$$
$$+\frac{ce^{\frac{e}{(c+dx)^2}}\left(3a^2d^2-3abcd+b^2\left(c^2+2e\right)\right)}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)^2)*(a + b*x)^2,x]
```

```
[Out] (c*(-3*a*b*c*d + 3*a^2*d^2 + b^2*(c^2 + 2*e))*E^(e/(c + d*x)^2))/
(3*d^3) + (d*E^(e/(c + d*x)^2)*x*(3*a^2*d^2 + 3*a*b*d^2*x + b^2*(
2*e + d^2*x^2)) - Sqrt[e]*(-6*a*b*c*d + 3*a^2*d^2 + b^2*(3*c^2 +
2*e))*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)] + 3*b*(b*c - a*d)*e*ExpInt
egralEi[e/(c + d*x)^2])/(3*d^3)
```

Maple [A] time = 0.015, size = 313, normalized size = 1.5

$$-\frac{1}{d}\left(a^2\left(-(dx+c)\,\mathrm{e}^{\frac{e}{(dx+c)^2}}+e\sqrt{\pi}Erf\left(\frac{1}{dx+c}\sqrt{-e}\right)\frac{1}{\sqrt{-e}}\right)+\frac{b^2}{d^2}\left(-\frac{(dx+c)^3}{3}\mathrm{e}^{\frac{e}{(dx+c)^2}}+\frac{2\,e}{3}\left(-(dx+c)\,\mathrm{e}^{\frac{e}{(dx+c)^2}}+e\sqrt{\pi}Erf\left(\frac{}{dx}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^2)*(b*x+a)^2,x)
```

```
[Out] -1/d*(a^2*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-
e)^(1/2)/(d*x+c)))+b^2/d^2*(-1/3*(d*x+c)^3*exp(e/(d*x+c)^2)+2/3*e
*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)^(1/2)/
(d*x+c))))+b^2/d^2*c^2*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)
^(1/2)*erf((-e)^(1/2)/(d*x+c)))+2*b/d*a*(-1/2*exp(e/(d*x+c)^2)*(d
*x+c)^2-1/2*e*Ei(1,-e/(d*x+c)^2))-2*b^2/d^2*c*(-1/2*exp(e/(d*x+c)
^2)*(d*x+c)^2-1/2*e*Ei(1,-e/(d*x+c)^2))-2*b/d*c*a*(-(d*x+c)*exp(e
/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)^(1/2)/(d*x+c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^2d^2x^3+3\,abd^2x^2+\left(3\,a^2d^2+2\,b^2e\right)x\right)e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{3\,d^2}+\int-\frac{2\left(b^2c^3e+3\left(b^2cd^2e-abd^3e\right)x^2-\left(3\,a^2d^3e-\left(3\,c^2de-2\,de^2\right)b^2\right)x\right)e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{3\left(d^5x^3+3\,cd^4x^2+3\,c^2d^3x+c^3d^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(b^2*d^2*x^3 + 3*a*b*d^2*x^2 + (3*a^2*d^2 + 2*b^2*e)*x)*e^(e/
(d^2*x^2 + 2*c*d*x + c^2))/d^2 + integrate(-2/3*(b^2*c^3*e + 3*(b
^2*c*d^2*e - a*b*d^3*e)*x^2 - (3*a^2*d^3*e - (3*c^2*d*e - 2*d*e^2
)*b^2)*x)*e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(d^5*x^3 + 3*c*d^4*x^2
+ 3*c^2*d^3*x + c^3*d^2), x)
```

Fricas [A] time = 0.256208, size = 292, normalized size = 1.36

$$-\frac{\sqrt{\pi}\left(2\,b^2e^2 + 3\left(b^2c^2 - 2\,abcd + a^2d^2\right)e\right)\operatorname{erf}\left(\frac{d\sqrt{-\frac{e}{d^2}}}{dx+c}\right) - \left(3\left(b^2cd - abd^2\right)e\operatorname{Ei}\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right) + \left(b^2d^4x^3 + 3\,abd^4x^2 + b^2c^3d \cdots\right.\right.}{3\,d^4\sqrt{-\frac{e}{d^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(sqrt(pi)*(2*b^2*e^2 + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*e)*
erf(d*sqrt(-e/d^2)/(d*x + c)) - (3*(b^2*c*d - a*b*d^2)*e*Ei(e/(d^
2*x^2 + 2*c*d*x + c^2)) + (b^2*d^4*x^3 + 3*a*b*d^4*x^2 + b^2*c^3*
d - 3*a*b*c^2*d^2 + 3*a^2*c*d^3 + 2*b^2*c*d*e + (3*a^2*d^4 + 2*b^
2*d^2*e)*x)*e^(e/(d^2*x^2 + 2*c*d*x + c^2)))*sqrt(-e/d^2))/(d^4*s
qrt(-e/d^2))
```

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

$$\int (a + bx)^2 e^{\frac{e}{c^2+2cdx+d^2x^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**2)*(b*x+a)**2,x)
```

```
[Out] Integral((a + b*x)**2*exp(e/(c**2 + 2*c*d*x + d**2*x**2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^2 e^{\left(\frac{e}{(dx+c)^2}\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)^2*e^(e/(d*x + c)^2), x)
```

3.411 $\int e^{\frac{e}{(c+dx)^2}}(a+bx)\,dx$

Optimal. Leaf size=111

$$\frac{\sqrt{\pi}\sqrt{e}(bc-ad)\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^2}-\frac{(c+dx)(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^2}-\frac{be\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{2d^2}+\frac{b(c+dx)^2e^{\frac{e}{(c+dx)^2}}}{2d^2}$$

```
[Out] -(((b*c - a*d)*E^(e/(c + d*x)^2)*(c + d*x))/d^2) + (b*E^(e/(c + d
*x)^2)*(c + d*x)^2)/(2*d^2) + ((b*c - a*d)*Sqrt[e]*Sqrt[Pi]*Erfi[
Sqrt[e]/(c + d*x)])/d^2 - (b*e*ExpIntegralEi[e/(c + d*x)^2])/(2*d
^2)
```

Rubi [A] time = 0.215714, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.353

$$\frac{\sqrt{\pi}\sqrt{e}(bc-ad)\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^2}-\frac{(c+dx)(bc-ad)e^{\frac{e}{(c+dx)^2}}}{d^2}-\frac{be\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{2d^2}+\frac{b(c+dx)^2e^{\frac{e}{(c+dx)^2}}}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)^2)*(a + b*x),x]
```

```
[Out] -(((b*c - a*d)*E^(e/(c + d*x)^2)*(c + d*x))/d^2) + (b*E^(e/(c + d
*x)^2)*(c + d*x)^2)/(2*d^2) + ((b*c - a*d)*Sqrt[e]*Sqrt[Pi]*Erfi[
Sqrt[e]/(c + d*x)])/d^2 - (b*e*ExpIntegralEi[e/(c + d*x)^2])/(2*d
^2)
```

Rubi in Sympy [A] time = 23.2661, size = 99, normalized size = 0.89

$$-\frac{be\operatorname{Ei}\left(\frac{e}{(c+dx)^2}\right)}{2d^2}+\frac{b\left(c+dx\right)^2e^{\frac{e}{(c+dx)^2}}}{2d^2}-\frac{\sqrt{\pi}\sqrt{e}\left(ad-bc\right)\operatorname{erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d^2}+\frac{\left(c+dx\right)\left(ad-bc\right)e^{\frac{e}{(c+dx)^2}}}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2)*(b*x+a),x)
```

```
[Out] -b*e*Ei(e/(c + d*x)**2)/(2*d**2) + b*(c + d*x)**2*exp(e/(c + d*x)
**2)/(2*d**2) - sqrt(pi)*sqrt(e)*(a*d - b*c)*erfi(sqrt(e)/(c + d*
x))/d**2 + (c + d*x)*(a*d - b*c)*exp(e/(c + d*x)**2)/d**2
```

Mathematica [A] time = 0.128382, size = 85, normalized size = 0.77

$$-\frac{2\sqrt{\pi}\sqrt{e}(ad-bc)\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)+(c+dx)e^{\frac{e}{(c+dx)^2}}(-2ad+bc-bdx)+be\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^2}\right)}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)^2)*(a + b*x),x]
```

```
[Out] -(E^(e/(c + d*x)^2)*(c + d*x)*(b*c - 2*a*d - b*d*x) + 2*(-(b*c) +
 a*d)*Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/(c + d*x)] + b*e*ExpIntegralE
i[e/(c + d*x)^2])/(2*d^2)
```

Maple [A] time = 0.01, size = 140, normalized size = 1.3

$$-\frac{1}{d}\left(a\left(-(dx+c)\,\mathrm{e}^{\frac{e}{(dx+c)^2}}+e\sqrt{\pi}Erf\left(\frac{1}{dx+c}\sqrt{-e}\right)\frac{1}{\sqrt{-e}}\right)+\frac{b}{d}\left(-\frac{(dx+c)^2}{2}\mathrm{e}^{\frac{e}{(dx+c)^2}}-\frac{e}{2}Ei\left(1,-\frac{e}{(dx+c)^2}\right)\right)-\frac{cb}{d}\left(-(dx+c)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^2)*(b*x+a),x)
```

```
[Out] -1/d*(a*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(1/2)*erf((-e)
^(1/2)/(d*x+c)))+b/d*(-1/2*exp(e/(d*x+c)^2)*(d*x+c)^2-1/2*e*Ei(1,
-e/(d*x+c)^2))-b/d*c*(-(d*x+c)*exp(e/(d*x+c)^2)+e*Pi^(1/2)/(-e)^(
1/2)*erf((-e)^(1/2)/(d*x+c))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(bx^2+2\,ax\right)e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}+\int\frac{\left(bdex^2+2\,adex\right)e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*x^2 + 2*a*x)*e^(e/(d^2*x^2 + 2*c*d*x + c^2)) + integrate((
b*d*e*x^2 + 2*a*d*e*x)*e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(d^3*x^3 +
 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x)
```

Fricas [A] time = 0.251072, size = 182, normalized size = 1.64

$$\frac{2\sqrt{\pi}(bc-ad)e\,\mathrm{erf}\left(\frac{d\sqrt{-\frac{e}{d^2}}}{dx+c}\right)-\left(bde\mathrm{Ei}\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)-\left(bd^3x^2+2\,ad^3x-bc^2d+2\,acd^2\right)e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}\right)\sqrt{-\frac{e}{d^2}}}{2\,d^3\sqrt{-\frac{e}{d^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*sqrt(pi)*(b*c - a*d)*e*erf(d*sqrt(-e/d^2)/(d*x + c)) - (b*
d*e*Ei(e/(d^2*x^2 + 2*c*d*x + c^2)) - (b*d^3*x^2 + 2*a*d^3*x - b*
c^2*d + 2*a*c*d^2)*e^(e/(d^2*x^2 + 2*c*d*x + c^2)))*sqrt(-e/d^2))
/(d^3*sqrt(-e/d^2))
```

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

$$\int(a+bx)\,e^{\frac{e}{c^2+2cdx+d^2x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**2)*(b*x+a),x)
```

```
[Out] Integral((a + b*x)*exp(e/(c**2 + 2*c*d*x + d**2*x**2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)e^{\left(\frac{e}{(dx+c)^2}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)*e^(e/(d*x + c)^2), x)
```

3.412 $\int e^{\frac{e}{(c+dx)^2}}\,dx$

Optimal. Leaf size=50

$$\frac{(c+dx)e^{\frac{e}{(c+dx)^2}}}{d}-\frac{\sqrt{\pi}\sqrt{e}\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d}$$

```
[Out] (E^(e/(c + d*x)^2)*(c + d*x))/d - (Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/
(c + d*x)])/d
```

Rubi [A] time = 0.0629938, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\frac{(c+dx)e^{\frac{e}{(c+dx)^2}}}{d}-\frac{\sqrt{\pi}\sqrt{e}\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

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

```
[Out] (E^(e/(c + d*x)^2)*(c + d*x))/d - (Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/
(c + d*x)])/d
```

Rubi in Sympy [A] time = 7.34943, size = 39, normalized size = 0.78

$$-\frac{\sqrt{\pi}\sqrt{e}\,\text{erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d}+\frac{(c+dx)\,e^{\frac{e}{(c+dx)^2}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2),x)
```

```
[Out] -sqrt(pi)*sqrt(e)*erfi(sqrt(e)/(c + d*x))/d + (c + d*x)*exp(e/(c
+ d*x)**2)/d
```

Mathematica [A] time = 0.0168698, size = 50, normalized size = 1.

$$\frac{(c+dx)e^{\frac{e}{(c+dx)^2}}}{d}-\frac{\sqrt{\pi}\sqrt{e}\text{Erfi}\left(\frac{\sqrt{e}}{c+dx}\right)}{d}$$

Antiderivative was successfully verified.

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

```
[Out] (E^(e/(c + d*x)^2)*(c + d*x))/d - (Sqrt[e]*Sqrt[Pi]*Erfi[Sqrt[e]/
(c + d*x)])/d
```

Maple [A] time = 0.007, size = 48, normalized size = 1.

$$-\frac{1}{d}\left(-(dx+c)\,e^{\frac{e}{(dx+c)^2}}+e\sqrt{\pi}Erf\left(\frac{1}{dx+c}\sqrt{-e}\right)\frac{1}{\sqrt{-e}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F] time = 0., size = 0, normalized size = 0.

$$2\,de\int \frac{xe^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\,dx+xe^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*d*e*integrate(x*e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(d^3*x^3 + 3*c*
d^2*x^2 + 3*c^2*d*x + c^3), x) + x*e^(e/(d^2*x^2 + 2*c*d*x + c^2)
)
```

Fricas [A] time = 0.256635, size = 104, normalized size = 2.08

$$-\frac{\sqrt{\pi}e\,\mathrm{erf}\left(\frac{d\sqrt{-\frac{e}{d^2}}}{dx+c}\right)-\left(d^2x+cd\right)\sqrt{-\frac{e}{d^2}}\,e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{d^2\sqrt{-\frac{e}{d^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int e^{\frac{e}{(c+dx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(exp(e/(c + d*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\frac{e}{(dx+c)^2}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(e/(d*x + c)^2), x)
```

3.413 $\int \frac{e^{\frac{e}{(c+dx)^2}}}{a+bx} \, dx$

Optimal. Leaf size=22

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^2}}}{a+bx}, x\right)$$

```
[Out] Unintegrable[E^(e/(c + d*x)^2)/(a + b*x), x]
```

Rubi [A] time = 0.0372409, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^2}}}{a+bx}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e/(c + d*x)^2)/(a + b*x),x]
```

```
[Out] Defer[Int][E^(e/(c + d*x)^2)/(a + b*x), x]
```

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

$$\int \frac{e^{\frac{e}{(c+dx)^2}}}{a+bx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2)/(b*x+a),x)
```

```
[Out] Integral(exp(e/(c + d*x)**2)/(a + b*x), x)
```

Mathematica [A] time = 0.0335861, size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{(c+dx)^2}}}{a+bx} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e/(c + d*x)^2)/(a + b*x),x]
```

```
[Out] Integrate[E^(e/(c + d*x)^2)/(a + b*x), x]
```

Maple [A] time = 0.072, size = 0, normalized size = 0.

$$\int \frac{1}{bx+a} \mathrm{e}^{\frac{e}{(dx+c)^2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^2)/(b*x+a),x)

[Out] int(exp(e/(d*x+c)^2)/(b*x+a),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^2}\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(e/(d*x + c)^2)/(b*x + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(b*x + a), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{c^2+2cdx+d^2x^2}}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**2)/(b*x+a),x)

[Out] Integral(exp(e/(c**2 + 2*c*d*x + d**2*x**2))/(a + b*x), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^2}\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(e/(d*x + c)^2)/(b*x + a), x)
```

3.414 $\int \frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^2} dx$

Optimal. Leaf size=22

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^2}, x\right)$$

```
[Out] CannotIntegrate[E^(e/(c + d*x)^2)/(a + b*x)^2, x]
```

Rubi [A] time = 0.089754, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^2}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e/(c + d*x)^2)/(a + b*x)^2,x]

[Out] Defer[Int][E^(e/(c + d*x)^2)/(a + b*x)^2, x]
```

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

$$\int \frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2)/(b*x+a)**2,x)

[Out] Integral(exp(e/(c + d*x)**2)/(a + b*x)**2, x)
```

Mathematica [A] time = 0.174712, size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^2} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e/(c + d*x)^2)/(a + b*x)^2,x]

[Out] Integrate[E^(e/(c + d*x)^2)/(a + b*x)^2, x]
```

Maple [A] time = 0.091, size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^2} e^{\frac{e}{(dx+c)^2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^2)/(b*x+a)^2,x)
```

```
[Out] int(exp(e/(d*x+c)^2)/(b*x+a)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^2}\right)}}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c)^2)/(b*x + a)^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{b^2x^2+2\,abx+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(b^2*x^2 + 2*a*b*x + a^2
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**2)/(b*x+a)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

undef

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] undef
```

3.415 $\int \frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^3}\,dx$

Optimal. Leaf size=22

$$\operatorname{Int}\left(\frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^3},x\right)$$

```
[Out] CannotIntegrate[E^(e/(c + d*x)^2)/(a + b*x)^3, x]
```

Rubi [A] time = 0.0835021, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\operatorname{Int}\left(\frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e/(c + d*x)^2)/(a + b*x)^3,x]

[Out] Defer[Int][E^(e/(c + d*x)^2)/(a + b*x)^3, x]
```

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

$$\int \frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**2)/(b*x+a)**3,x)

[Out] Integral(exp(e/(c + d*x)**2)/(a + b*x)**3, x)
```

Mathematica [A] time = 0.103429, size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{(c+dx)^2}}}{(a+bx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e/(c + d*x)^2)/(a + b*x)^3,x]

[Out] Integrate[E^(e/(c + d*x)^2)/(a + b*x)^3, x]
```

Maple [A] time = 0.119, size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^3} e^{\frac{e}{(dx+c)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^2)/(b*x+a)^3,x)

[Out] int(exp(e/(d*x+c)^2)/(b*x+a)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^2}\right)}}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(e/(d*x + c)^2)/(b*x + a)^3,x, algorithm="maxima")

[Out] integrate(e^(e/(d*x + c)^2)/(b*x + a)^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(\frac{e}{d^2x^2+2\,cdx+c^2}\right)}}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(e/(d*x + c)^2)/(b*x + a)^3,x, algorithm="fricas")

[Out] integral(e^(e/(d^2*x^2 + 2*c*d*x + c^2))/(b^3*x^3 + 3*a*b^2*x^2 +
 3*a^2*b*x + a^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**2)/(b*x+a)**3,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^2}\right)}}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(e/(d*x + c)^2)/(b*x + a)^3,x, algorithm="giac")

[Out] integrate(e^(e/(d*x + c)^2)/(b*x + a)^3, x)
```

3.416 $\int e^{\frac{e}{(c+dx)^3}}(a+bx)^3\,dx$

Optimal. Leaf size=206

$$\frac{b(c+dx)^2(bc-ad)^2\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{d^4} - \frac{(c+dx)(bc-ad)^3\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^4} + \frac{b^3(c+dx)^4\left(-\frac{e}{(c+dx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{e}{(c+dx)^3}\right)}{3d^4} + \frac{b^2e(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^3}\right)}{d^4} - \frac{b^2(c+dx)^3(bc-ad)e^{\frac{e}{(c+dx)^3}}}{d^4}$$

```
[Out] -((b^2*(b*c - a*d)*E^(e/(c + d*x)^3)*(c + d*x)^3)/d^4) + (b^2*(b*
c - a*d)*e*ExpIntegralEi[e/(c + d*x)^3])/d^4 + (b^3*(-(e/(c + d*x
)^3))^(4/3)*(c + d*x)^4*Gamma[-4/3, -(e/(c + d*x)^3)])/(3*d^4) +
(b*(b*c - a*d)^2*(-(e/(c + d*x)^3))^(2/3)*(c + d*x)^2*Gamma[-2/3,
 -(e/(c + d*x)^3)])/d^4 - ((b*c - a*d)^3*(-(e/(c + d*x)^3))^(1/3)
*(c + d*x)*Gamma[-1/3, -(e/(c + d*x)^3)])/(3*d^4)
```

Rubi [A] time = 0.323752, antiderivative size = 206, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{b(c+dx)^2(bc-ad)^2\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{d^4} - \frac{(c+dx)(bc-ad)^3\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^4} + \frac{b^3(c+dx)^4\left(-\frac{e}{(c+dx)^3}\right)^{4/3}\text{Gamma}\left(-\frac{4}{3},-\frac{e}{(c+dx)^3}\right)}{3d^4} + \frac{b^2e(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^3}\right)}{d^4} - \frac{b^2(c+dx)^3(bc-ad)e^{\frac{e}{(c+dx)^3}}}{d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)^3)*(a + b*x)^3,x]
```

```
[Out] -((b^2*(b*c - a*d)*E^(e/(c + d*x)^3)*(c + d*x)^3)/d^4) + (b^2*(b*
c - a*d)*e*ExpIntegralEi[e/(c + d*x)^3])/d^4 + (b^3*(-(e/(c + d*x
)^3))^(4/3)*(c + d*x)^4*Gamma[-4/3, -(e/(c + d*x)^3)])/(3*d^4) +
(b*(b*c - a*d)^2*(-(e/(c + d*x)^3))^(2/3)*(c + d*x)^2*Gamma[-2/3,
 -(e/(c + d*x)^3)])/d^4 - ((b*c - a*d)^3*(-(e/(c + d*x)^3))^(1/3)
*(c + d*x)*Gamma[-1/3, -(e/(c + d*x)^3)])/(3*d^4)
```

Rubi in Sympy [A] time = 42.635, size = 196, normalized size = 0.95

$$\frac{b^3\left(-\frac{e}{(c+dx)^3}\right)^{\frac{4}{3}}(c+dx)^4\left(-\frac{4}{3},-\frac{e}{(c+dx)^3}\right)}{3d^4} - \frac{b^2e\,(ad-bc)\,\text{Ei}\left(\frac{e}{(c+dx)^3}\right)}{d^4} + \frac{b^2\,(c+dx)^3\,(ad-bc)\,e^{\frac{e}{(c+dx)^3}}}{d^4} + \frac{b\left(-\frac{e}{(c+dx)^3}\right)^{\frac{2}{3}}(c+dx)^2\,(ad-bc)^2\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{d^4} + \frac{\sqrt[3]{-\frac{e}{(c+dx)^3}}\,(c+dx)\,(ad-bc)^3\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**3)*(b*x+a)**3,x)
```

```
[Out] b**3*(-e/(c + d*x)**3)**(4/3)*(c + d*x)**4*Gamma(-4/3, -e/(c + d*
x)**3)/(3*d**4) - b**2*e*(a*d - b*c)*Ei(e/(c + d*x)**3)/d**4 + b*
*2*(c + d*x)**3*(a*d - b*c)*exp(e/(c + d*x)**3)/d**4 + b*(-e/(c +
 d*x)**3)**(2/3)*(c + d*x)**2*(a*d - b*c)**2*Gamma(-2/3, -e/(c +
d*x)**3)/d**4 + (-e/(c + d*x)**3)**(1/3)*(c + d*x)*(a*d - b*c)**3
*Gamma(-1/3, -e/(c + d*x)**3)/(3*d**4)
```

Mathematica [A] time = 1.05482, size = 279, normalized size = 1.35

$$\frac{(c+dx)\sqrt[3]{-\frac{e}{(c+dx)^3}}\left(-4a^3d^3+12a^2bcd^2-12ab^2c^2d+b^3\left(4c^3-3e\right)\right)\text{Gamma}\left(\frac{2}{3},-\frac{e}{(c+dx)^3}\right)-6b(c+dx)^2(bc-ad)^2\left(-\frac{}{(c+}\right.}{4d^4}$$
$$+\frac{dxe^{\frac{e}{(c+dx)^3}}\left(4a^3d^3+6a^2bd^3x+4ab^2d^3x^2+b^3\left(d^3x^3+3e\right)\right)+4b^2e(bc-ad)\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^3}\right)}{4d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)^3)*(a + b*x)^3,x]
```

```
[Out] (d*E^(e/(c + d*x)^3)*x*(4*a^3*d^3 + 6*a^2*b*d^3*x + 4*a*b^2*d^3*x
^2 + b^3*(3*e + d^3*x^3)) + 4*b^2*(b*c - a*d)*e*ExpIntegralEi[e/(
c + d*x)^3])/(4*d^4) + (-(c*(-4*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 4*a
^3*d^3 + b^3*(c^3 - 3*e))*E^(e/(c + d*x)^3)) - 6*b*(b*c - a*d)^2*
(-(e/(c + d*x)^3))^(2/3)*(c + d*x)^2*Gamma[1/3, -(e/(c + d*x)^3)]
 + (-12*a*b^2*c^2*d + 12*a^2*b*c*d^2 - 4*a^3*d^3 + b^3*(4*c^3 - 3
*e))*(-(e/(c + d*x)^3))^(1/3)*(c + d*x)*Gamma[2/3, -(e/(c + d*x)^
3)])/(4*d^4)
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int e^{\frac{e}{(dx+c)^3}}(bx+a)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^3)*(b*x+a)^3,x)
```

```
[Out] int(exp(e/(d*x+c)^3)*(b*x+a)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(b^3d^3x^4+4\,ab^2d^3x^3+6\,a^2bd^3x^2+\left(4\,a^3d^3+3\,b^3e\right)x\right)e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{4\,d^3}+\int$$
$$-\frac{3\left(b^3c^4e+4\left(b^3cd^3e-ab^2d^4e\right)x^3+6\left(b^3c^2d^2e-a^2bd^4e\right)x^2-\left(4\,a^3d^4e-\left(4\,c^3de-3\,de^2\right)b^3\right)x\right)e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{4\left(d^7x^4+4\,cd^6x^3+6\,c^2d^5x^2+4\,c^3d^4x+c^4d^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(b^3*d^3*x^4 + 4*a*b^2*d^3*x^3 + 6*a^2*b*d^3*x^2 + (4*a^3*d^3
 + 3*b^3*e)*x)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/d^
3 + integrate(-3/4*(b^3*c^4*e + 4*(b^3*c*d^3*e - a*b^2*d^4*e)*x^3
 + 6*(b^3*c^2*d^2*e - a^2*b*d^4*e)*x^2 - (4*a^3*d^4*e - (4*c^3*d*
e - 3*d*e^2)*b^3)*x)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^
3))/(d^7*x^4 + 4*c*d^6*x^3 + 6*c^2*d^5*x^2 + 4*c^3*d^4*x + c^4*d^
3), x)
```

Fricas [A] time = 0.270777, size = 505, normalized size = 2.45

$$6\left(b^3c^2d - 2\,ab^2cd^2 + a^2bd^3\right)e\left(-\frac{e}{d^3}\right)^{\frac{1}{3}}\left(\frac{1}{3}, -\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right) + \left(3\,b^3e^2 - 4\left(b^3c^3 - 3\,ab^2c^2d + 3\,a^2bcd^2 - a^3d^3\right)e\right)\left(\frac{2}{3},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(6*(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*e*(-e/d^3)^(1/3)*g
amma(1/3, -e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)) + (3*b^3*
e^2 - 4*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*e)*ga
mma(2/3, -e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)) + (4*(b^3*
c*d^2 - a*b^2*d^3)*e*Ei(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^
3)) + (b^3*d^6*x^4 + 4*a*b^2*d^6*x^3 + 6*a^2*b*d^6*x^2 - b^3*c^4*
d^2 + 4*a*b^2*c^3*d^3 - 6*a^2*b*c^2*d^4 + 4*a^3*c*d^5 + 3*b^3*c*d
^2*e + (4*a^3*d^6 + 3*b^3*d^3*e)*x)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 +
 3*c^2*d*x + c^3)))*(-e/d^3)^(2/3))/(d^6*(-e/d^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**3)*(b*x+a)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^3 e^{\left(\frac{e}{(dx+c)^3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)^3*e^(e/(d*x + c)^3), x)
```

3.417 $\int e^{\frac{e}{(c+dx)^3}}(a+bx)^2\,dx$

Optimal. Leaf size=151

$$-\frac{2b(c+dx)^2(bc-ad)\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{3d^3}+\frac{(c+dx)(bc-ad)^2\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^3}-\frac{b^2e\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^3}\right)}{3d^3}+\frac{b^2(c+dx)^3e^{\frac{e}{(c+dx)^3}}}{3d^3}$$

```
[Out] (b^2*E^(e/(c + d*x)^3)*(c + d*x)^3)/(3*d^3) - (b^2*e*ExpIntegralE
i[e/(c + d*x)^3])/(3*d^3) - (2*b*(b*c - a*d)*(-(e/(c + d*x)^3))^(
2/3)*(c + d*x)^2*Gamma[-2/3, -(e/(c + d*x)^3)])/(3*d^3) + ((b*c -
 a*d)^2*(-(e/(c + d*x)^3))^(1/3)*(c + d*x)*Gamma[-1/3, -(e/(c + d
*x)^3)])/(3*d^3)
```

Rubi [A] time = 0.234966, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{2b(c+dx)^2(bc-ad)\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{3d^3}+\frac{(c+dx)(bc-ad)^2\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^3}-\frac{b^2e\text{ExpIntegralEi}\left(\frac{e}{(c+dx)^3}\right)}{3d^3}+\frac{b^2(c+dx)^3e^{\frac{e}{(c+dx)^3}}}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)^3)*(a + b*x)^2,x]
```

```
[Out] (b^2*E^(e/(c + d*x)^3)*(c + d*x)^3)/(3*d^3) - (b^2*e*ExpIntegralE
i[e/(c + d*x)^3])/(3*d^3) - (2*b*(b*c - a*d)*(-(e/(c + d*x)^3))^(
2/3)*(c + d*x)^2*Gamma[-2/3, -(e/(c + d*x)^3)])/(3*d^3) + ((b*c -
 a*d)^2*(-(e/(c + d*x)^3))^(1/3)*(c + d*x)*Gamma[-1/3, -(e/(c + d
*x)^3)])/(3*d^3)
```

Rubi in Sympy [A] time = 29.9945, size = 143, normalized size = 0.95

$$-\frac{b^2e\,\text{Ei}\left(\frac{e}{(c+dx)^3}\right)}{3d^3}+\frac{b^2\left(c+dx\right)^3e^{\frac{e}{(c+dx)^3}}}{3d^3}+\frac{2b\left(-\frac{e}{(c+dx)^3}\right)^{\frac{2}{3}}\left(c+dx\right)^2\left(ad-bc\right)\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{3d^3}+\frac{\sqrt[3]{-\frac{e}{\left(c+dx\right)^3}}\left(c+dx\right)\left(ad-bc\right)^2\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**3)*(b*x+a)**2,x)
```

```
[Out] -b**2*e*Ei(e/(c + d*x)**3)/(3*d**3) + b**2*(c + d*x)**3*exp(e/(c
+ d*x)**3)/(3*d**3) + 2*b*(-e/(c + d*x)**3)**(2/3)*(c + d*x)**2*(
a*d - b*c)*Gamma(-2/3, -e/(c + d*x)**3)/(3*d**3) + (-e/(c + d*x)*
```

```
*3)**(1/3)*(c + d*x)*(a*d - b*c)**2*Gamma(-1/3, -e/(c + d*x)**3)/
(3*d**3)
```

Mathematica [A] time = 1.44339, size = 184, normalized size = 1.22

$$\frac{3b(c+dx)^2(bc-ad)\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(\frac{1}{3},-\frac{e}{(c+dx)^3}\right)-3(c+dx)(bc-ad)^2\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(\frac{2}{3},-\frac{e}{(c+dx)^3}\right)+c\left(3a^2\right.}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)^3)*(a + b*x)^2,x]
```

```
[Out] (c*(b^2*c^2 - 3*a*b*c*d + 3*a^2*d^2)*E^(e/(c + d*x)^3) + d^3*E^(e
/(c + d*x)^3)*x*(3*a^2 + 3*a*b*x + b^2*x^2) - b^2*e*ExpIntegralEi
[e/(c + d*x)^3] + 3*b*(b*c - a*d)*(-(e/(c + d*x)^3))^(2/3)*(c + d
*x)^2*Gamma[1/3, -(e/(c + d*x)^3)] - 3*(b*c - a*d)^2*(-(e/(c + d*
x)^3))^(1/3)*(c + d*x)*Gamma[2/3, -(e/(c + d*x)^3)])/(3*d^3)
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int e^{\frac{e}{(dx+c)^3}}(bx+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^3)*(b*x+a)^2,x)
```

```
[Out] int(exp(e/(d*x+c)^3)*(b*x+a)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{3}\left(b^2x^3+3\,abx^2+3\,a^2x\right)e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}+\int\frac{\left(b^2dex^3+3\,abdex^2+3\,a^2dex\right)e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{d^4x^4+4\,cd^3x^3+6\,c^2d^2x^2+4\,c^3dx+c^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*e^(e/(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 1/3*(b^2*x^3 + 3*a*b*x^2 + 3*a^2*x)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 +
 3*c^2*d*x + c^3)) + integrate((b^2*d*e*x^3 + 3*a*b*d*e*x^2 + 3*a
^2*d*e*x)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^
4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.260902, size = 370, normalized size = 2.45

$$-\frac{3\left(b^2cd-abd^2\right)e\left(-\frac{e}{d^3}\right)^{\frac{1}{3}}\left(\frac{1}{3},-\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)-3\left(b^2c^2-2\,abcd+a^2d^2\right)e\left(\frac{2}{3},-\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)+\left(b^2d^2e\text{Ei}\right.}{3\,d^5\left(-\frac{}{}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*e^(e/(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/3*(3*(b^2*c*d - a*b*d^2)*e*(-e/d^3)^(1/3)*gamma(1/3, -e/(d^3*x
^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)) - 3*(b^2*c^2 - 2*a*b*c*d + a
^2*d^2)*e*gamma(2/3, -e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)
) + (b^2*d^2*e*Ei(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)) -
(b^2*d^5*x^3 + 3*a*b*d^5*x^2 + 3*a^2*d^5*x + b^2*c^3*d^2 - 3*a*b*
c^2*d^3 + 3*a^2*c*d^4)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x +
c^3)))*(-e/d^3)^(2/3))/(d^5*(-e/d^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**3)*(b*x+a)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^2 e^{\left(\frac{e}{(dx+c)^3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*e^(e/(d*x + c)^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*e^(e/(d*x + c)^3), x)
```

3.418 $\int e^{\frac{e}{(c+dx)^3}}(a+bx)\,dx$

Optimal. Leaf size=92

$$\frac{b(c+dx)^2\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{3d^2}-\frac{(c+dx)(bc-ad)\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^2}$$

```
[Out] (b*(-(e/(c + d*x)^3))^(2/3)*(c + d*x)^2*Gamma[-2/3, -(e/(c + d*x)
^3)])/(3*d^2) - ((b*c - a*d)*(-(e/(c + d*x)^3))^(1/3)*(c + d*x)*G
amma[-1/3, -(e/(c + d*x)^3)])/(3*d^2)
```

Rubi [A] time = 0.11049, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{b(c+dx)^2\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{3d^2}-\frac{(c+dx)(bc-ad)\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(e/(c + d*x)^3)*(a + b*x),x]
```

```
[Out] (b*(-(e/(c + d*x)^3))^(2/3)*(c + d*x)^2*Gamma[-2/3, -(e/(c + d*x)
^3)])/(3*d^2) - ((b*c - a*d)*(-(e/(c + d*x)^3))^(1/3)*(c + d*x)*G
amma[-1/3, -(e/(c + d*x)^3)])/(3*d^2)
```

Rubi in Sympy [A] time = 11.4601, size = 87, normalized size = 0.95

$$\frac{b\left(-\frac{e}{(c+dx)^3}\right)^{\frac{2}{3}}(c+dx)^2\left(-\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{3d^2}+\frac{\sqrt[3]{-\frac{e}{(c+dx)^3}}(c+dx)(ad-bc)\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**3)*(b*x+a),x)
```

```
[Out] b*(-e/(c + d*x)**3)**(2/3)*(c + d*x)**2*Gamma(-2/3, -e/(c + d*x)*
*3)/(3*d**2) + (-e/(c + d*x)**3)**(1/3)*(c + d*x)*(a*d - b*c)*Gam
ma(-1/3, -e/(c + d*x)**3)/(3*d**2)
```

Mathematica [A] time = 0.42059, size = 111, normalized size = 1.21

$$-\frac{(c+dx)\left(2(ad-bc)\sqrt[3]{-\frac{e}{(c+dx)^3}}\text{Gamma}\left(\frac{2}{3},-\frac{e}{(c+dx)^3}\right)+b(c+dx)\left(-\frac{e}{(c+dx)^3}\right)^{2/3}\text{Gamma}\left(\frac{1}{3},-\frac{e}{(c+dx)^3}\right)+e^{\frac{e}{(c+dx)^3}}(-2ad+\right.}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(e/(c + d*x)^3)*(a + b*x),x]
```

```
[Out] -((c + d*x)*(E^(e/(c + d*x)^3)*(b*c - 2*a*d - b*d*x) + b*(-(e/(c
+ d*x)^3))^(2/3)*(c + d*x)*Gamma[1/3, -(e/(c + d*x)^3)] + 2*(-(b*
c) + a*d)*(-(e/(c + d*x)^3))^(1/3)*Gamma[2/3, -(e/(c + d*x)^3)]))
```

```
/(2*d^2)
```

Maple [F] time = 0.038, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\frac{e}{(dx+c)^3}} (bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^3)*(b*x+a),x)
```

```
[Out] int(exp(e/(d*x+c)^3)*(b*x+a),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\left(bx^2+2\,ax\right)e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}+\int \frac{3\left(bdex^2+2\,adex\right)e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{2\left(d^4x^4+4\,cd^3x^3+6\,c^2d^2x^2+4\,c^3dx+c^4\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*x^2 + 2*a*x)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3
)) + integrate(3/2*(b*d*e*x^2 + 2*a*d*e*x)*e^(e/(d^3*x^3 + 3*c*d^
2*x^2 + 3*c^2*d*x + c^3))/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2
+ 4*c^3*d*x + c^4), x)
```

Fricas [A] time = 0.249228, size = 240, normalized size = 2.61

$$\frac{bde\left(-\frac{e}{d^3}\right)^{\frac{1}{3}}\left(\frac{1}{3},-\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)-2\,(bc-ad)e\left(\frac{2}{3},-\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)+\left(bd^4x^2+2\,ad^4x-bc^2d^2+2\,acd^3\right)\left(-\right.}{2\,d^4\left(-\frac{e}{d^3}\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*d*e*(-e/d^3)^(1/3)*gamma(1/3, -e/(d^3*x^3 + 3*c*d^2*x^2 +
3*c^2*d*x + c^3)) - 2*(b*c - a*d)*e*gamma(2/3, -e/(d^3*x^3 + 3*c*
d^2*x^2 + 3*c^2*d*x + c^3)) + (b*d^4*x^2 + 2*a*d^4*x - b*c^2*d^2
+ 2*a*c*d^3)*(-e/d^3)^(2/3)*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d
*x + c^3)))/(d^4*(-e/d^3)^(2/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**3)*(b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)e^{\left(\frac{e}{(dx+c)^3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*x + a)*e^(e/(d*x + c)^3), x)
```

3.419 $\int e^{\frac{e}{(c+dx)^3}}\,dx$

Optimal. Leaf size=40

$$\frac{(c+dx)\sqrt[3]{-\frac{e}{(c+dx)^3}}\,\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d}$$

```
[Out] ((-(e/(c + d*x)^3))^(1/3)*(c + d*x)*Gamma[-1/3, -(e/(c + d*x)^3)]
)/(3*d)
```

Rubi [A] time = 0.0151144, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{(c+dx)\sqrt[3]{-\frac{e}{(c+dx)^3}}\,\text{Gamma}\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d}$$

Antiderivative was successfully verified.

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

```
[Out] ((-(e/(c + d*x)^3))^(1/3)*(c + d*x)*Gamma[-1/3, -(e/(c + d*x)^3)]
)/(3*d)
```

Rubi in Sympy [A] time = 1.79105, size = 36, normalized size = 0.9

$$\frac{\sqrt[3]{-\frac{e}{(c+dx)^3}}\,(c+dx)\left(-\frac{1}{3},-\frac{e}{(c+dx)^3}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**3),x)
```

```
[Out] (-e/(c + d*x)**3)**(1/3)*(c + d*x)*Gamma(-1/3, -e/(c + d*x)**3)/(
3*d)
```

Mathematica [A] time = 0.00507461, size = 61, normalized size = 1.52

$$\frac{e\text{Gamma}\left(\frac{2}{3},-\frac{e}{(c+dx)^3}\right)}{d(c+dx)^2\left(-\frac{e}{(c+dx)^3}\right)^{2/3}}+\frac{(c+dx)e^{\frac{e}{(c+dx)^3}}}{d}$$

Antiderivative was successfully verified.

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

```
[Out] (E^(e/(c + d*x)^3)*(c + d*x))/d + (e*Gamma[2/3, -(e/(c + d*x)^3)]
)/(d*(-(e/(c + d*x)^3))^(2/3)*(c + d*x)^2)
```

Maple [F] time = 0.023, size = 0, normalized size = 0.

$$\int \mathrm{e}^{\frac{e}{(dx+c)^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(exp(e/(d*x+c)^3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$3\,de\int \frac{xe^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{d^4x^4+4\,cd^3x^3+6\,c^2d^2x^2+4\,c^3dx+c^4}\,dx+xe^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 3*d*e*integrate(x*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))
/(d^4*x^4 + 4*c*d^3*x^3 + 6*c^2*d^2*x^2 + 4*c^3*d*x + c^4), x) +
x*e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))
```

Fricas [A] time = 0.256165, size = 136, normalized size = 3.4

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(\frac{e}{(dx+c)^3}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e/(d*x + c)^3), x)
```

3.420 $\int \frac{e^{\frac{e}{(c+dx)^3}}}{a+bx} \, dx$

Optimal. Leaf size=22

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^3}}}{a+bx},x\right)$$

```
[Out] Unintegrable[E^(e/(c + d*x)^3)/(a + b*x), x]
```

Rubi [A] time = 0.0371551, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^3}}}{a+bx},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e/(c + d*x)^3)/(a + b*x),x]

[Out] Defer[Int][E^(e/(c + d*x)^3)/(a + b*x), x]
```

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

$$\int \frac{e^{\frac{e}{(c+dx)^3}}}{a+bx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**3)/(b*x+a),x)

[Out] Integral(exp(e/(c + d*x)**3)/(a + b*x), x)
```

Mathematica [A] time = 0.022715, size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{(c+dx)^3}}}{a+bx} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e/(c + d*x)^3)/(a + b*x),x]

[Out] Integrate[E^(e/(c + d*x)^3)/(a + b*x), x]
```

Maple [A] time = 0.07, size = 0, normalized size = 0.

$$\int \frac{1}{bx+a} \mathrm{e}^{\frac{e}{(dx+c)^3}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^3)/(b*x+a),x)

[Out] int(exp(e/(d*x+c)^3)/(b*x+a),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^3}\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(e/(d*x + c)^3)/(b*x + a), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(b*x + a
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**3)/(b*x+a),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^3}\right)}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(e/(d*x + c)^3)/(b*x + a), x)
```

3.421 $\int \frac{e^{\frac{e}{(c+dx)^3}}}{(a+bx)^2} \, dx$

Optimal. Leaf size=22

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^3}}}{(a+bx)^2}, x\right)$$

```
[Out] CannotIntegrate[E^(e/(c + d*x)^3)/(a + b*x)^2, x]
```

Rubi [A] time = 0.0897674, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{e^{\frac{e}{(c+dx)^3}}}{(a+bx)^2}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(e/(c + d*x)^3)/(a + b*x)^2,x]

[Out] Defer[Int][E^(e/(c + d*x)^3)/(a + b*x)^2, x]
```

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

$$\int \frac{e^{\frac{e}{(c+dx)^3}}}{(a+bx)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e/(d*x+c)**3)/(b*x+a)**2,x)

[Out] Integral(exp(e/(c + d*x)**3)/(a + b*x)**2, x)
```

Mathematica [A] time = 0.274808, size = 0, normalized size = 0.

$$\int \frac{e^{\frac{e}{(c+dx)^3}}}{(a+bx)^2} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(e/(c + d*x)^3)/(a + b*x)^2,x]

[Out] Integrate[E^(e/(c + d*x)^3)/(a + b*x)^2, x]
```

Maple [A] time = 0.084, size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^2} e^{\frac{e}{(dx+c)^3}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e/(d*x+c)^3)/(b*x+a)^2,x)
```

```
[Out] int(exp(e/(d*x+c)^3)/(b*x+a)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(\frac{e}{(dx+c)^3}\right)}}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(e/(d*x + c)^3)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] integrate(e^(e/(d*x + c)^3)/(b*x + a)^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(\frac{e}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3}\right)}}{b^2x^2+2\,abx+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(e/(d*x + c)^3)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] integral(e^(e/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3))/(b^2*x^2
 + 2*a*b*x + a^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e/(d*x+c)**3)/(b*x+a)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$undef$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(e/(d*x + c)^3)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] undef
```

3.422 $\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{g+hx}\,dx$

Optimal. Leaf size=104

$$\frac{F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{h}-\frac{F^{\frac{bf}{d}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(bc-ad)}{d(c+dx)}\right)}{h}$$

```
[Out] -((F^(e + (b*f)/d)*ExpIntegralEi[-(((b*c - a*d)*f*Log[F])/(d*(c +
 d*x)))])/h) + (F^(e + (f*(b*g - a*h))/(d*g - c*h))*ExpIntegralEi
[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x)))])/h
```

Rubi [A] time = 1.60172, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192

$$\frac{F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{h}-\frac{F^{\frac{bf}{d}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(bc-ad)}{d(c+dx)}\right)}{h}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x),x]
```

```
[Out] -((F^(e + (b*f)/d)*ExpIntegralEi[-(((b*c - a*d)*f*Log[F])/(d*(c +
 d*x)))])/h) + (F^(e + (f*(b*g - a*h))/(d*g - c*h))*ExpIntegralEi
[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x)))])/h
```

Rubi in Sympy [A] time = 39.3447, size = 90, normalized size = 0.87

$$-\frac{F^{\frac{bf+de}{d}}\,\text{Ei}\left(\frac{f(ad-bc)\log(F)}{d(c+dx)}\right)}{h}+\frac{F^{\frac{e(ch-dg)+f(ah-bg)}{ch-dg}}\,\text{Ei}\left(-\frac{f(g+hx)(ad-bc)\log(F)}{(c+dx)(ch-dg)}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g),x)
```

```
[Out] -F**((b*f + d*e)/d)*Ei(f*(a*d - b*c)*log(F)/(d*(c + d*x)))/h + F*
*((e*(c*h - d*g) + f*(a*h - b*g))/(c*h - d*g))*Ei(-f*(g + h*x)*(a
*d - b*c)*log(F)/((c + d*x)*(c*h - d*g)))/h
```

Mathematica [A] time = 0.223699, size = 103, normalized size = 0.99

$$\frac{F^{\frac{bf}{d}+e}\left(F^{\frac{fh(bc-ad)}{d(dg-ch)}}\text{ExpIntegralEi}\left(\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(ch-dg)}\right)-\text{ExpIntegralEi}\left(\frac{\log(F)(adf-bcf)}{d(c+dx)}\right)\right)}{h}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x),x]
```

```
[Out] (F^(e + (b*f)/d)*(-ExpIntegralEi[((-(b*c*f) + a*d*f)*Log[F])/(d*(
c + d*x))] + F^(((b*c - a*d)*f*h)/(d*(d*g - c*h)))*ExpIntegralEi[
((b*c - a*d)*f*(g + h*x)*Log[F])/((-(d*g) + c*h)*(c + d*x))]))/h
```

Maple [B] time = 0.055, size = 432, normalized size = 4.2

$$\frac{ad}{h\left(ad-cb\right)}F^{\frac{bf+ed}{d}}Ei\left(1,-\frac{f\left(ad-cb\right)\ln\left(F\right)}{\left(dx+c\right)d}-\frac{\left(bf+ed\right)\ln\left(F\right)}{d}-\frac{-\ln\left(F\right)bf-de\ln\left(F\right)}{d}\right)$$
$$-\frac{cb}{h\left(ad-cb\right)}F^{\frac{bf+ed}{d}}Ei\left(1,-\frac{f\left(ad-cb\right)\ln\left(F\right)}{\left(dx+c\right)d}-\frac{\left(bf+ed\right)\ln\left(F\right)}{d}-\frac{-\ln\left(F\right)bf-de\ln\left(F\right)}{d}\right)$$
$$-\frac{ad}{h\left(ad-cb\right)}F^{\frac{afh-bfg+che-deg}{ch-dg}}Ei\left(1,-\frac{f\left(ad-cb\right)\ln\left(F\right)}{\left(dx+c\right)d}-\frac{\left(bf+ed\right)\ln\left(F\right)}{d}-\frac{-\ln\left(F\right)afh+\ln\left(F\right)bfg-\ln\left(F\right)ceh+\ln\left(F\right)de}{ch-dg}\right.$$
$$+\frac{cb}{h\left(ad-cb\right)}F^{\frac{afh-bfg+che-deg}{ch-dg}}Ei\left(1,-\frac{f\left(ad-cb\right)\ln\left(F\right)}{\left(dx+c\right)d}-\frac{\left(bf+ed\right)\ln\left(F\right)}{d}-\frac{-\ln\left(F\right)afh+\ln\left(F\right)bfg-\ln\left(F\right)ceh+\ln\left(F\right)de}{ch-dg}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e+f*(b*x+a)/(d*x+c))/(h*x+g),x)
```

```
[Out] d/h/(a*d-b*c)*F^((b*f+d*e)/d)*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(
b*f+d*e)*ln(F)/d-(-ln(F)*b*f-d*e*ln(F))/d)*a-1/h/(a*d-b*c)*F^((b*
f+d*e)/d)*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-l
n(F)*b*f-d*e*ln(F))/d)*c*b-d/h/(a*d-b*c)*F^((a*f*h-b*f*g+c*e*h-d*
e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)
/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*
a+1/h/(a*d-b*c)*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(
a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*
f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*c*b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g),x, algorithm="maxima")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g), x)
```

Fricas [A] time = 0.306801, size = 182, normalized size = 1.75

$$-\frac{F^{\frac{de+bf}{d}}\operatorname{Ei}\left(-\frac{(bc-ad)f\log(F)}{d^2x+cd}\right)-F^{\frac{(de+bf)g-(ce+af)h}{dg-ch}}\operatorname{Ei}\left(-\frac{((bc-ad)fhx+(bc-ad)fg)\log(F)}{cdg-c^2h+(d^2g-cdh)x}\right)}{h}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g),x, algorithm="fricas")
```

```
[Out] -(F^((d*e + b*f)/d)*Ei(-(b*c - a*d)*f*log(F)/(d^2*x + c*d)) - F^(
((d*e + b*f)*g - (c*e + a*f)*h)/(d*g - c*h))*Ei(-((b*c - a*d)*f*h
*x + (b*c - a*d)*f*g)*log(F)/(c*d*g - c^2*h + (d^2*g - c*d*h)*x))
)/h
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{hx+g}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g),x, algorithm="giac")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g), x)
```

3.423 $\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{(g+hx)^2}\,dx$

Optimal. Leaf size=159

$$\frac{f\log(F)(bc-ad)F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^2}+\frac{dF^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{h(dg-ch)}-\frac{F^{\frac{f(a+bx)}{c+dx}+e}}{h(g+hx)}$$

```
[Out] (d*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))))/(h*(d*g - c*h
)) - F^(e + (f*(a + b*x))/(c + d*x))/(h*(g + h*x)) + ((b*c - a*d)
*f*F^(e + (f*(b*g - a*h))/(d*g - c*h))*ExpIntegralEi[-(((b*c - a*
d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x)))]*Log[F])/(d*g - c
*h)^2
```

Rubi [A] time = 3.63333, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{f\log(F)(bc-ad)F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^2}+\frac{dF^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{h(dg-ch)}-\frac{F^{\frac{f(a+bx)}{c+dx}+e}}{h(g+hx)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^2,x]
```

```
[Out] (d*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))))/(h*(d*g - c*h
)) - F^(e + (f*(a + b*x))/(c + d*x))/(h*(g + h*x)) + ((b*c - a*d)
*f*F^(e + (f*(b*g - a*h))/(d*g - c*h))*ExpIntegralEi[-(((b*c - a*
d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x)))]*Log[F])/(d*g - c
*h)^2
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.57565, size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{(g+hx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^2,x]
```

```
[Out] Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^2, x]
```

Maple [B] time = 0.05, size = 560, normalized size = 3.5

$$\frac{\ln(F)\,adf}{(ch-dg)^2}F^{\frac{bfx+dex+af+ce}{dx+c}}\left(\frac{f\ln(F)\,a}{dx+c}-\frac{cb\ln(F)\,f}{(dx+c)\,d}+\frac{\ln(F)\,bf}{d}+\ln(F)\,e-\frac{\ln(F)\,afh}{ch-dg}+\frac{\ln(F)\,bfg}{ch-dg}-\frac{\ln(F)\,ceh}{ch-dg}+\frac{\ln(F)\,deg}{ch-dg}\right.$$
$$-\frac{cb\ln(F)\,f}{(ch-dg)^2}F^{\frac{bfx+dex+af+ce}{dx+c}}\left(\frac{f\ln(F)\,a}{dx+c}-\frac{cb\ln(F)\,f}{(dx+c)\,d}+\frac{\ln(F)\,bf}{d}+\ln(F)\,e-\frac{\ln(F)\,afh}{ch-dg}+\frac{\ln(F)\,bfg}{ch-dg}-\frac{\ln(F)\,ceh}{ch-dg}+\frac{\ln(F)\,de}{ch-dg}\right.$$
$$+\frac{\ln(F)\,adf}{(ch-dg)^2}F^{\frac{afh-bfg+che-deg}{ch-dg}}Ei\left(1,-\frac{\ln(F)\,f\,(ad-cb)}{(dx+c)\,d}-\frac{(bf+ed)\ln(F)}{d}-\frac{-\ln(F)\,afh+\ln(F)\,bfg-\ln(F)\,ceh+\ln(F)\,deg}{ch-dg}\right.$$
$$-\frac{cb\ln(F)\,f}{(ch-dg)^2}F^{\frac{afh-bfg+che-deg}{ch-dg}}Ei\left(1,-\frac{\ln(F)\,f\,(ad-cb)}{(dx+c)\,d}-\frac{(bf+ed)\ln(F)}{d}-\frac{-\ln(F)\,afh+\ln(F)\,bfg-\ln(F)\,ceh+\ln(F)\,de}{ch-dg}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e+f*(b*x+a)/(d*x+c))/(h*x+g)^2,x)
```

```
[Out] f*ln(F)/(c*h-d*g)^2*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d
*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(
F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d
*g)*ln(F)*d*e*g)*a*d-f*ln(F)/(c*h-d*g)^2*F^((b*f*x+d*e*x+a*f+c*e)
/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln
(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)
*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*c*b+f*ln(F)/(c*h-d*g)^2*F^(
(a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d
*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(
F)*d*e*g)/(c*h-d*g))*a*d-f*ln(F)/(c*h-d*g)^2*F^((a*f*h-b*f*g+c*e*
h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*l
n(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*
g))*c*b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{(hx+g)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^2,x, algorithm="maxima")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^2, x)
```

Fricas [A] time = 0.264283, size = 297, normalized size = 1.87

$$\frac{((bc-ad)fhx+(bc-ad)fg)F^{\frac{(de+bf)g-(ce+af)h}{dg-ch}}\,\mathrm{Ei}\left(-\frac{((bc-ad)fhx+(bc-ad)fg)\log(F)}{cdg-c^2h+(d^2g-cdh)x}\right)\log(F)+\left(cdg-c^2h+\left(d^2g-cdh\right)x\right)F^{\frac{ce+af+}{d}}}{d^2g^3-2\,cdg^2h+c^2gh^2+(d^2g^2h-2\,cdgh^2+c^2h^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^2,x, algorithm="fricas")
```

```
[Out] (((b*c - a*d)*f*h*x + (b*c - a*d)*f*g)*F^(((d*e + b*f)*g - (c*e +
 a*f)*h)/(d*g - c*h))*Ei(-((b*c - a*d)*f*h*x + (b*c - a*d)*f*g)*l
og(F)/(c*d*g - c^2*h + (d^2*g - c*d*h)*x))*log(F) + (c*d*g - c^2*
h + (d^2*g - c*d*h)*x)*F^((c*e + a*f + (d*e + b*f)*x)/(d*x + c)))
/(d^2*g^3 - 2*c*d*g^2*h + c^2*g*h^2 + (d^2*g^2*h - 2*c*d*g*h^2 +
c^2*h^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{(hx+g)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^2,x, algorithm="giac")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^2, x)
```

3.424 $\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{(g+hx)^3}\,dx$

Optimal. Leaf size=366

$$\frac{d^2F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{2h(dg-ch)^2}+\frac{f^2h\log^2(F)(bc-ad)^2F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{2(dg-ch)^4}+\frac{df\log(F)(bc-ad)F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^3}-\frac{F^{\frac{f(a+bx)}{c+dx}+e}}{2h(g+hx)^2}+\frac{df\log(F)(bc-ad)F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{2(dg-ch)^3}-\frac{f\log(F)(bc-ad)F^{\frac{f(a+bx)}{c+dx}+e}}{2(g+hx)(dg-ch)^2}$$

```
[Out] (d^2*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))))/(2*h*(d*g -
 c*h)^2) - F^(e + (f*(a + b*x))/(c + d*x))/(2*h*(g + h*x)^2) + (d
*(b*c - a*d)*f*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x)))*Lo
g[F])/(2*(d*g - c*h)^3) - ((b*c - a*d)*f*F^(e + (f*(a + b*x))/(c
+ d*x))*Log[F])/(2*(d*g - c*h)^2*(g + h*x)) + (d*(b*c - a*d)*f*F^
(e + (f*(b*g - a*h))/(d*g - c*h))*ExpIntegralEi[-(((b*c - a*d)*f*
(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x)))]*Log[F])/(d*g - c*h)^3
 + ((b*c - a*d)^2*f^2*F^(e + (f*(b*g - a*h))/(d*g - c*h))*h*ExpIn
tegralEi[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x
)))]*Log[F]^2)/(2*(d*g - c*h)^4)
```

Rubi [A] time = 7.40363, antiderivative size = 366, normalized size of antiderivative = 1., number of steps used = 24, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{d^2F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{2h(dg-ch)^2}+\frac{f^2h\log^2(F)(bc-ad)^2F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{2(dg-ch)^4}+\frac{df\log(F)(bc-ad)F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^3}-\frac{F^{\frac{f(a+bx)}{c+dx}+e}}{2h(g+hx)^2}+\frac{df\log(F)(bc-ad)F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{2(dg-ch)^3}-\frac{f\log(F)(bc-ad)F^{\frac{f(a+bx)}{c+dx}+e}}{2(g+hx)(dg-ch)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^3,x]
```


```
[Out] (d^2*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))))/(2*h*(d*g -
 c*h)^2) - F^(e + (f*(a + b*x))/(c + d*x))/(2*h*(g + h*x)^2) + (d
*(b*c - a*d)*f*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x)))*Lo
g[F])/(2*(d*g - c*h)^3) - ((b*c - a*d)*f*F^(e + (f*(a + b*x))/(c
+ d*x))*Log[F])/(2*(d*g - c*h)^2*(g + h*x)) + (d*(b*c - a*d)*f*F^
(e + (f*(b*g - a*h))/(d*g - c*h))*ExpIntegralEi[-(((b*c - a*d)*f*
(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x)))]*Log[F])/(d*g - c*h)^3
 + ((b*c - a*d)^2*f^2*F^(e + (f*(b*g - a*h))/(d*g - c*h))*h*ExpIn
tegralEi[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x
)))]*Log[F]^2)/(2*(d*g - c*h)^4)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g)**3,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.315812, size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{(g+hx)^3} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^3,x]

[Out] Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^3, x]
```

Maple [B] time = 0.095, size = 1934, normalized size = 5.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e+f*(b*x+a)/(d*x+c))/(h*x+g)^3,x)

[Out] -ln(F)*f*d^2/(c*h-d*g)^3*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(
F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g
)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(
c*h-d*g)*ln(F)*d*e*g)*a+ln(F)*f*d/(c*h-d*g)^3*F^((b*f*x+d*e*x+a*f
+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b
*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h
-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*c*b-ln(F)*f*d^2/(c*h-d
*g)^3*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*l
n(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*
c*e*h+ln(F)*d*e*g)/(c*h-d*g))*a+ln(F)*f*d/(c*h-d*g)^3*F^((a*f*h-b
*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b
*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g
)/(c*h-d*g))*c*b-1/2*ln(F)^2*f^2*d^2*h/(c*h-d*g)^4*F^((b*f*x+d*e*
x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F
)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1
/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^2*a^2+ln(F)^2*f^2
*d*h/(c*h-d*g)^4*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+
c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*
a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)
*ln(F)*d*e*g)^2*a*c*b-1/2*ln(F)^2*f^2*h/(c*h-d*g)^4*F^((b*f*x+d*e
*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(
F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-
1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^2*c^2*b^2-1/2*ln
(F)^2*f^2*d^2*h/(c*h-d*g)^4*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*
ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-
d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+
1/(c*h-d*g)*ln(F)*d*e*g)*a^2+ln(F)^2*f^2*d*h/(c*h-d*g)^4*F^((b*f*
x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*
b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b
*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*a*c*b-1/2*l
n(F)^2*f^2*h/(c*h-d*g)^4*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(
F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g
)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(
c*h-d*g)*ln(F)*d*e*g)*c^2*b^2-1/2*ln(F)^2*f^2*d^2*h/(c*h-d*g)^4*F
^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/
(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+l
n(F)*d*e*g)/(c*h-d*g))*a^2+ln(F)^2*f^2*d*h/(c*h-d*g)^4*F^((a*f*h-
b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(
b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*
g)/(c*h-d*g))*a*c*b-1/2*ln(F)^2*f^2*h/(c*h-d*g)^4*F^((a*f*h-b*f*g
+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d
```

```
*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c
*h-d*g))*c^2*b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{(hx+g)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^3,x, algorithm="maxima")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^3, x)
```

Fricas [A] time = 0.336944, size = 1019, normalized size = 2.78

$$\frac{\left(\left(\left(b^2c^2 - 2\,abcd + a^2d^2\right)f^2h^3x^2 + 2\left(b^2c^2 - 2\,abcd + a^2d^2\right)f^2gh^2x + \left(b^2c^2 - 2\,abcd + a^2d^2\right)f^2g^2h\right)\log\left(F\right)^2 + 2\left(\left(bcd^2 - ac\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^3,x, algorithm="fricas")
```

```
[Out] 1/2*((((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*f^2*h^3*x^2 + 2*(b^2*c^2 -
 2*a*b*c*d + a^2*d^2)*f^2*g*h^2*x + (b^2*c^2 - 2*a*b*c*d + a^2*d^
2)*f^2*g^2*h)*log(F)^2 + 2*((b*c*d^2 - a*d^3)*f*g^3 - (b*c^2*d -
a*c*d^2)*f*g^2*h + ((b*c*d^2 - a*d^3)*f*g*h^2 - (b*c^2*d - a*c*d^
2)*f*h^3)*x^2 + 2*((b*c*d^2 - a*d^3)*f*g^2*h - (b*c^2*d - a*c*d^2
)*f*g*h^2)*x)*log(F))*F^(((d*e + b*f)*g - (c*e + a*f)*h)/(d*g - c
*h))*Ei(-((b*c - a*d)*f*h*x + (b*c - a*d)*f*g)*log(F)/(c*d*g - c^
2*h + (d^2*g - c*d*h)*x)) + (2*c*d^3*g^3 - 5*c^2*d^2*g^2*h + 4*c^
3*d*g*h^2 - c^4*h^3 + (d^4*g^2*h - 2*c*d^3*g*h^2 + c^2*d^2*h^3)*x
^2 + 2*(d^4*g^3 - 2*c*d^3*g^2*h + c^2*d^2*g*h^2)*x + ((b*c^2*d -
a*c*d^2)*f*g^2*h - (b*c^3 - a*c^2*d)*f*g*h^2 + ((b*c*d^2 - a*d^3)
*f*g*h^2 - (b*c^2*d - a*c*d^2)*f*h^3)*x^2 + ((b*c*d^2 - a*d^3)*f*
g^2*h - (b*c^3 - a*c^2*d)*f*h^3)*x)*log(F))*F^((c*e + a*f + (d*e
+ b*f)*x)/(d*x + c)))/(d^4*g^6 - 4*c*d^3*g^5*h + 6*c^2*d^2*g^4*h^
2 - 4*c^3*d*g^3*h^3 + c^4*g^2*h^4 + (d^4*g^4*h^2 - 4*c*d^3*g^3*h^
3 + 6*c^2*d^2*g^2*h^4 - 4*c^3*d*g*h^5 + c^4*h^6)*x^2 + 2*(d^4*g^5
*h - 4*c*d^3*g^4*h^2 + 6*c^2*d^2*g^3*h^3 - 4*c^3*d*g^2*h^4 + c^4*
g*h^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{(hx+g)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^3,x, algorithm="giac")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^3, x)
```

3.425 $\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{(g+hx)^4} dx$

Optimal. Leaf size=634

$$\frac{d^3F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{3h(dg-ch)^3}+\frac{d^2f\log(F)(bc-ad)F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^4}+\frac{5d^2f\log(F)(bc-ad)F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{6(dg-ch)^4}+\frac{f^3h^2\log^3(F)(bc-ad)^3F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{6(dg-ch)^6}+\frac{df^2h\log^2(F)(bc-ad)^2F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^5}+\frac{df^2h\log^2(F)(bc-ad)^2F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{6(dg-ch)^5}-\frac{f^2h\log^2(F)(bc-ad)^2F^{\frac{f(a+bx)}{c+dx}+e}}{6(g+hx)(dg-ch)^4}-\frac{F^{\frac{f(a+bx)}{c+dx}+e}}{3h(g+hx)^3}-\frac{2df\log(F)(bc-ad)F^{\frac{f(a+bx)}{c+dx}+e}}{3(g+hx)(dg-ch)^3}-\frac{f\log(F)(bc-ad)F^{\frac{f(a+bx)}{c+dx}+e}}{6(g+hx)^2(dg-ch)^2}$$

```
[Out] (d^3*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))))/(3*h*(d*g -
 c*h)^3) - F^(e + (f*(a + b*x))/(c + d*x))/(3*h*(g + h*x)^3) + (5
*d^2*(b*c - a*d)*f*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))
)*Log[F])/(6*(d*g - c*h)^4) - ((b*c - a*d)*f*F^(e + (f*(a + b*x))
/(c + d*x))*Log[F])/(6*(d*g - c*h)^2*(g + h*x)^2) - (2*d*(b*c - a
*d)*f*F^(e + (f*(a + b*x))/(c + d*x))*Log[F])/(3*(d*g - c*h)^3*(g
 + h*x)) + (d^2*(b*c - a*d)*f*F^(e + (f*(b*g - a*h))/(d*g - c*h))
*ExpIntegralEi[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c
 + d*x)))]*Log[F])/(d*g - c*h)^4 + (d*(b*c - a*d)^2*f^2*F^(e + (b
*f)/d - ((b*c - a*d)*f)/(d*(c + d*x)))*h*Log[F]^2)/(6*(d*g - c*h)
^5) - ((b*c - a*d)^2*f^2*F^(e + (f*(a + b*x))/(c + d*x))*h*Log[F]
^2)/(6*(d*g - c*h)^4*(g + h*x)) + (d*(b*c - a*d)^2*f^2*F^(e + (f*
(b*g - a*h))/(d*g - c*h))*h*ExpIntegralEi[-(((b*c - a*d)*f*(g + h
*x)*Log[F])/((d*g - c*h)*(c + d*x)))]*Log[F]^2)/(d*g - c*h)^5 + (
(b*c - a*d)^3*f^3*F^(e + (f*(b*g - a*h))/(d*g - c*h))*h^2*ExpInte
gralEi[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x))
)]*Log[F]^3)/(6*(d*g - c*h)^6)
```

Rubi [A] time = 14.4596, antiderivative size = 634, normalized size of antiderivative = 1., number of steps used = 48, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{d^3F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{3h(dg-ch)^3}+\frac{d^2f\log(F)(bc-ad)F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^4}+\frac{5d^2f\log(F)(bc-ad)F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{6(dg-ch)^4}+\frac{f^3h^2\log^3(F)(bc-ad)^3F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{6(dg-ch)^6}+\frac{df^2h\log^2(F)(bc-ad)^2F^{\frac{f(bg-ah)}{dg-ch}+e}\text{ExpIntegralEi}\left(-\frac{f\log(F)(g+hx)(bc-ad)}{(c+dx)(dg-ch)}\right)}{(dg-ch)^5}+\frac{df^2h\log^2(F)(bc-ad)^2F^{-\frac{f(bc-ad)}{d(c+dx)}+\frac{bf}{d}+e}}{6(dg-ch)^5}-\frac{f^2h\log^2(F)(bc-ad)^2F^{\frac{f(a+bx)}{c+dx}+e}}{6(g+hx)(dg-ch)^4}-\frac{F^{\frac{f(a+bx)}{c+dx}+e}}{3h(g+hx)^3}-\frac{2df\log(F)(bc-ad)F^{\frac{f(a+bx)}{c+dx}+e}}{3(g+hx)(dg-ch)^3}-\frac{f\log(F)(bc-ad)F^{\frac{f(a+bx)}{c+dx}+e}}{6(g+hx)^2(dg-ch)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^4,x]
```

```
[Out] (d^3*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))))/(3*h*(d*g -
 c*h)^3) - F^(e + (f*(a + b*x))/(c + d*x))/(3*h*(g + h*x)^3) + (5
*d^2*(b*c - a*d)*f*F^(e + (b*f)/d - ((b*c - a*d)*f)/(d*(c + d*x))
)*Log[F])/(6*(d*g - c*h)^4) - ((b*c - a*d)*f*F^(e + (f*(a + b*x))
/(c + d*x))*Log[F])/(6*(d*g - c*h)^2*(g + h*x)^2) - (2*d*(b*c - a
*d)*f*F^(e + (f*(a + b*x))/(c + d*x))*Log[F])/(3*(d*g - c*h)^3*(g
 + h*x)) + (d^2*(b*c - a*d)*f*F^(e + (f*(b*g - a*h))/(d*g - c*h))
*ExpIntegralEi[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c
 + d*x)))]*Log[F])/(d*g - c*h)^4 + (d*(b*c - a*d)^2*f^2*F^(e + (b
*f)/d - ((b*c - a*d)*f)/(d*(c + d*x)))*h*Log[F]^2)/(6*(d*g - c*h)
^5) - ((b*c - a*d)^2*f^2*F^(e + (f*(a + b*x))/(c + d*x))*h*Log[F]
^2)/(6*(d*g - c*h)^4*(g + h*x)) + (d*(b*c - a*d)^2*f^2*F^(e + (f*
(b*g - a*h))/(d*g - c*h))*h*ExpIntegralEi[-(((b*c - a*d)*f*(g + h
*x)*Log[F])/((d*g - c*h)*(c + d*x)))]*Log[F]^2)/(d*g - c*h)^5 + (
(b*c - a*d)^3*f^3*F^(e + (f*(b*g - a*h))/(d*g - c*h))*h^2*ExpInte
gralEi[-(((b*c - a*d)*f*(g + h*x)*Log[F])/((d*g - c*h)*(c + d*x))
)]*Log[F]^3)/(6*(d*g - c*h)^6)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g)**4,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.606867, size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{f(a+bx)}{c+dx}}}{(g+hx)^4}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^4,x]
```

```
[Out] Integrate[F^(e + (f*(a + b*x))/(c + d*x))/(g + h*x)^4, x]
```

Maple [B] time = 0.162, size = 4471, normalized size = 7.1

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(e+f*(b*x+a)/(d*x+c))/(h*x+g)^4,x)
```

```
[Out] -1/3*ln(F)^3*f^3*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c)
)/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/
(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c
*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^3*b^3*c^3-1/6*ln(F)^3*f^3*h^2/(c*h-
d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(
F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c
*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e
```

```
*g)^2*b^3*c^3-1/6*ln(F)^3*f^3*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f
+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b
*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h
-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*b^3*c^3-1/6*ln(F)^3*f^
3*h^2/(c*h-d*g)^6*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f
*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*
b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*b^3*c^3+1/6*ln(F)^3*f^3
*d^3*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(
d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln
(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-
d*g)*ln(F)*d*e*g)*a^3+1/6*ln(F)^3*f^3*d^3*h^2/(c*h-d*g)^6*F^((a*f
*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c
)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d
*e*g)/(c*h-d*g))*a^3+ln(F)^2*f^2*d^3*h/(c*h-d*g)^5*F^((b*f*x+d*e*
x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F
)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1
/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^2*a^2+ln(F)^2*f^2
*d^3*h/(c*h-d*g)^5*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*
x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F
)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*
g)*ln(F)*d*e*g)*a^2+ln(F)^2*f^2*d^3*h/(c*h-d*g)^5*F^((a*f*h-b*f*g
+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d
*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c
*h-d*g))*a^2+1/3*ln(F)^3*f^3*d^3*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+
a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/
d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(
c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^3*a^3+1/6*ln(F)^3*f
^3*d^3*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)
/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*
ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*
h-d*g)*ln(F)*d*e*g)^2*a^3-ln(F)*f*d^2/(c*h-d*g)^4*F^((b*f*x+d*e*x
+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)
/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/
(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*c*b-ln(F)*f*d^2/(c
*h-d*g)^4*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*
c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln
(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*c*b+ln(F)^2*f^2*d*h/(c*h-d*g)^5
*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(
d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g
)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^2*
c^2*b^2+ln(F)^2*f^2*d*h/(c*h-d*g)^5*F^((b*f*x+d*e*x+a*f+c*e)/(d*x
+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e
-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F
)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*c^2*b^2+ln(F)^2*f^2*d*h/(c*h-d*g
)^5*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*d-b*c)*ln(
F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*g-ln(F)*c*
e*h+ln(F)*d*e*g)/(c*h-d*g))*c^2*b^2+ln(F)^3*f^3*d*h^2/(c*h-d*g)^6
*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(
d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g
)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^3*
a*b^2*c^2-1/2*ln(F)^3*f^3*d^2*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f
+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b
*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h
-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)^2*a^2*c*b+1/2*ln(F)^3*
f^3*d*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/
(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*l
n(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h
-d*g)*ln(F)*d*e*g)^2*a*b^2*c^2-1/2*ln(F)^3*f^3*d^2*h^2/(c*h-d*g)^
6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/
(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*
g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*a
^2*c*b+1/2*ln(F)^3*f^3*d*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)
/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln
(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)
*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*a*b^2*c^2-1/2*ln(F)^3*f^3*d
^2*h^2/(c*h-d*g)^6*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-
f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)
*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*a^2*c*b+1/2*ln(F)^3*f^
3*d*h^2/(c*h-d*g)^6*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,
-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F
)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*a*b^2*c^2-2*ln(F)^2*f
^2*d^2*h/(c*h-d*g)^5*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(
```

```
d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln
(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-
d*g)*ln(F)*d*e*g)^2*a*c*b-2*ln(F)^2*f^2*d^2*h/(c*h-d*g)^5*F^((b*f
*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c
*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*
b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*a*c*b-2*ln
(F)^2*f^2*d^2*h/(c*h-d*g)^5*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g
))*Ei(1,-f*(a*d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*
f*h+ln(F)*b*f*g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*a*c*b-ln(F)^3
*f^3*d^2*h^2/(c*h-d*g)^6*F^((b*f*x+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(
F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g
)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(
c*h-d*g)*ln(F)*d*e*g)^3*a^2*c*b+ln(F)*f*d^3/(c*h-d*g)^4*F^((b*f*x
+d*e*x+a*f+c*e)/(d*x+c))/(f*ln(F)/(d*x+c)*a-f*ln(F)/d/(d*x+c)*c*b
+ln(F)/d*b*f+ln(F)*e-1/(c*h-d*g)*ln(F)*a*f*h+1/(c*h-d*g)*ln(F)*b*
f*g-1/(c*h-d*g)*ln(F)*c*e*h+1/(c*h-d*g)*ln(F)*d*e*g)*a+ln(F)*f*d^
3/(c*h-d*g)^4*F^((a*f*h-b*f*g+c*e*h-d*e*g)/(c*h-d*g))*Ei(1,-f*(a*
d-b*c)*ln(F)/d/(d*x+c)-(b*f+d*e)*ln(F)/d-(-ln(F)*a*f*h+ln(F)*b*f*
g-ln(F)*c*e*h+ln(F)*d*e*g)/(c*h-d*g))*a
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{(hx+g)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^4,x, algorithm="maxima")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^4, x)
```

Fricas [A] time = 0.281614, size = 3038, normalized size = 4.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^4,x, algorithm="fricas")
```

```
[Out] 1/6*((((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*f^3*h^
5*x^3 + 3*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*f^3
*g*h^4*x^2 + 3*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3
)*f^3*g^2*h^3*x + (b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*
d^3)*f^3*g^3*h^2)*log(F)^3 + 6*((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*
d^4)*f^2*g^4*h - (b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*f^2*g^3*
h^2 + ((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*f^2*g*h^4 - (b^2*c^3
*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*f^2*h^5)*x^3 + 3*((b^2*c^2*d^2 -
2*a*b*c*d^3 + a^2*d^4)*f^2*g^2*h^3 - (b^2*c^3*d - 2*a*b*c^2*d^2 +
 a^2*c*d^3)*f^2*g*h^4)*x^2 + 3*((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*
d^4)*f^2*g^3*h^2 - (b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*f^2*g^
2*h^3)*x)*log(F)^2 + 6*((b*c*d^4 - a*d^5)*f*g^5 - 2*(b*c^2*d^3 -
a*c*d^4)*f*g^4*h + (b*c^3*d^2 - a*c^2*d^3)*f*g^3*h^2 + ((b*c*d^4
- a*d^5)*f*g^2*h^3 - 2*(b*c^2*d^3 - a*c*d^4)*f*g*h^4 + (b*c^3*d^2
 - a*c^2*d^3)*f*h^5)*x^3 + 3*((b*c*d^4 - a*d^5)*f*g^3*h^2 - 2*(b*
c^2*d^3 - a*c*d^4)*f*g^2*h^3 + (b*c^3*d^2 - a*c^2*d^3)*f*g*h^4)*x
^2 + 3*((b*c*d^4 - a*d^5)*f*g^4*h - 2*(b*c^2*d^3 - a*c*d^4)*f*g^3
*h^2 + (b*c^3*d^2 - a*c^2*d^3)*f*g^2*h^3)*x)*log(F))*F^(((d*e + b
*f)*g - (c*e + a*f)*h)/(d*g - c*h))*Ei(-((b*c - a*d)*f*h*x + (b*c
 - a*d)*f*g)*log(F)/(c*d*g - c^2*h + (d^2*g - c*d*h)*x)) + (6*c*d
^5*g^5 - 24*c^2*d^4*g^4*h + 38*c^3*d^3*g^3*h^2 - 30*c^4*d^2*g^2*h
^3 + 12*c^5*d*g*h^4 - 2*c^6*h^5 + 2*(d^6*g^3*h^2 - 3*c*d^5*g^2*h^
3 + 3*c^2*d^4*g*h^4 - c^3*d^3*h^5)*x^3 + 6*(d^6*g^4*h - 3*c*d^5*g
```

```
^3*h^2 + 3*c^2*d^4*g^2*h^3 - c^3*d^3*g*h^4)*x^2 + ((b^2*c^3*d - 2
*a*b*c^2*d^2 + a^2*c*d^3)*f^2*g^3*h^2 - (b^2*c^4 - 2*a*b*c^3*d +
a^2*c^2*d^2)*f^2*g^2*h^3 + ((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)
*f^2*g*h^4 - (b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*f^2*h^5)*x^3
 + (2*(b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*f^2*g^2*h^3 - (b^2*c^
3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*f^2*g*h^4 - (b^2*c^4 - 2*a*b*c^3
*d + a^2*c^2*d^2)*f^2*h^5)*x^2 + ((b^2*c^2*d^2 - 2*a*b*c*d^3 + a^
2*d^4)*f^2*g^3*h^2 + (b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*f^2*
g^2*h^3 - 2*(b^2*c^4 - 2*a*b*c^3*d + a^2*c^2*d^2)*f^2*g*h^4)*x)*l
og(F)^2 + 6*(d^6*g^5 - 3*c*d^5*g^4*h + 3*c^2*d^4*g^3*h^2 - c^3*d^
3*g^2*h^3)*x + (6*(b*c^2*d^3 - a*c*d^4)*f*g^4*h - 13*(b*c^3*d^2 -
 a*c^2*d^3)*f*g^3*h^2 + 8*(b*c^4*d - a*c^3*d^2)*f*g^2*h^3 - (b*c^
5 - a*c^4*d)*f*g*h^4 + 5*((b*c*d^4 - a*d^5)*f*g^2*h^3 - 2*(b*c^2*
d^3 - a*c*d^4)*f*g*h^4 + (b*c^3*d^2 - a*c^2*d^3)*f*h^5)*x^3 + (11
*(b*c*d^4 - a*d^5)*f*g^3*h^2 - 18*(b*c^2*d^3 - a*c*d^4)*f*g^2*h^3
 + 3*(b*c^3*d^2 - a*c^2*d^3)*f*g*h^4 + 4*(b*c^4*d - a*c^3*d^2)*f*
h^5)*x^2 + (6*(b*c*d^4 - a*d^5)*f*g^4*h - 2*(b*c^2*d^3 - a*c*d^4)
*f*g^3*h^2 - 15*(b*c^3*d^2 - a*c^2*d^3)*f*g^2*h^3 + 12*(b*c^4*d -
 a*c^3*d^2)*f*g*h^4 - (b*c^5 - a*c^4*d)*f*h^5)*x)*log(F))*F^((c*e
 + a*f + (d*e + b*f)*x)/(d*x + c)))/(d^6*g^9 - 6*c*d^5*g^8*h + 15
*c^2*d^4*g^7*h^2 - 20*c^3*d^3*g^6*h^3 + 15*c^4*d^2*g^5*h^4 - 6*c^
5*d*g^4*h^5 + c^6*g^3*h^6 + (d^6*g^6*h^3 - 6*c*d^5*g^5*h^4 + 15*c
^2*d^4*g^4*h^5 - 20*c^3*d^3*g^3*h^6 + 15*c^4*d^2*g^2*h^7 - 6*c^5*
d*g*h^8 + c^6*h^9)*x^3 + 3*(d^6*g^7*h^2 - 6*c*d^5*g^6*h^3 + 15*c^
2*d^4*g^5*h^4 - 20*c^3*d^3*g^4*h^5 + 15*c^4*d^2*g^3*h^6 - 6*c^5*d
*g^2*h^7 + c^6*g*h^8)*x^2 + 3*(d^6*g^8*h - 6*c*d^5*g^7*h^2 + 15*c
^2*d^4*g^6*h^3 - 20*c^3*d^3*g^5*h^4 + 15*c^4*d^2*g^4*h^5 - 6*c^5*
d*g^3*h^6 + c^6*g^2*h^7)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(e+f*(b*x+a)/(d*x+c))/(h*x+g)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{e+\frac{(bx+a)f}{dx+c}}}{(hx+g)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^4,x, algorithm="giac")
```

```
[Out] integrate(F^(e + (b*x + a)*f/(d*x + c))/(h*x + g)^4, x)
```

3.426 $\int f^{a+bx+cx^2} x^3 \, dx$

Optimal. Leaf size=217

$$\frac{3\sqrt{\pi}bf^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\log^{\frac{3}{2}}(f)}+\frac{b^2f^{a+bx+cx^2}}{8c^3\log(f)}-\frac{\sqrt{\pi}b^3f^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{16c^{7/2}\sqrt{\log(f)}}-\frac{f^{a+bx+cx^2}}{2c^2\log^2(f)}-\frac{bxf^{a+bx+cx^2}}{4c^2\log(f)}+\frac{x^2f^{a+bx+cx^2}}{2c\log(f)}$$

```
[Out] -f^(a + b*x + c*x^2)/(2*c^2*Log[f]^2) + (3*b*f^(a - b^2/(4*c))*Sq
rt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(8*c^(5/2)*L
og[f]^(3/2)) + (b^2*f^(a + b*x + c*x^2))/(8*c^3*Log[f]) - (b*f^(a
 + b*x + c*x^2)*x)/(4*c^2*Log[f]) + (f^(a + b*x + c*x^2)*x^2)/(2*
c*Log[f]) - (b^3*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqr
t[Log[f]])/(2*Sqrt[c])])/(16*c^(7/2)*Sqrt[Log[f]])
```

Rubi [A] time = 0.3645, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$\frac{3\sqrt{\pi}bf^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\log^{\frac{3}{2}}(f)}+\frac{b^2f^{a+bx+cx^2}}{8c^3\log(f)}-\frac{\sqrt{\pi}b^3f^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{16c^{7/2}\sqrt{\log(f)}}-\frac{f^{a+bx+cx^2}}{2c^2\log^2(f)}-\frac{bxf^{a+bx+cx^2}}{4c^2\log(f)}+\frac{x^2f^{a+bx+cx^2}}{2c\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*x^3,x]
```

```
[Out] -f^(a + b*x + c*x^2)/(2*c^2*Log[f]^2) + (3*b*f^(a - b^2/(4*c))*Sq
rt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(8*c^(5/2)*L
og[f]^(3/2)) + (b^2*f^(a + b*x + c*x^2))/(8*c^3*Log[f]) - (b*f^(a
 + b*x + c*x^2)*x)/(4*c^2*Log[f]) + (f^(a + b*x + c*x^2)*x^2)/(2*
c*Log[f]) - (b^3*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqr
t[Log[f]])/(2*Sqrt[c])])/(16*c^(7/2)*Sqrt[Log[f]])
```

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

$$-\frac{b^3f^{a-\frac{b^2}{4c}}\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{8c^3}+\frac{b^2f^{a+bx+cx^2}}{8c^3\log(f)}+\frac{3bf^{a-\frac{b^2}{4c}}\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{4c^2\log(f)}-\frac{bf^{a+bx+cx^2}x}{4c^2\log(f)}+\frac{f^{a+bx+cx^2}x^2}{2c\log(f)}-\frac{f^{a+bx+cx^2}}{2c^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*x**3,x)
```

```
[Out] -b**3*f**(a - b**2/(4*c))*Integral(f**(b**2/(4*c) + b*x + c*x**2)
, x)/(8*c**3) + b**2*f**(a + b*x + c*x**2)/(8*c**3*log(f)) + 3*b*
f**(a - b**2/(4*c))*Integral(f**(b**2/(4*c) + b*x + c*x**2), x)/(
4*c**2*log(f)) - b*f**(a + b*x + c*x**2)*x/(4*c**2*log(f)) + f**(
a + b*x + c*x**2)*x**2/(2*c*log(f)) - f**(a + b*x + c*x**2)/(2*c*
*2*log(f)**2)
```

Mathematica [A] time = 0.238616, size = 122, normalized size = 0.56

$$\frac{f^{a-\frac{b^2}{4c}}\left(2\sqrt{c}f^{\frac{(b+2cx)^2}{4c}}\left(\log(f)\left(b^2-2bcx+4c^2x^2\right)-4c\right)+\sqrt{\pi}b\sqrt{\log(f)}\left(6c-b^2\log(f)\right)\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)\right)}{16c^{7/2}\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*x^3,x]
```

```
[Out] (f^(a - b^2/(4*c))*(b*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2
*Sqrt[c])]*Sqrt[Log[f]]*(6*c - b^2*Log[f]) + 2*Sqrt[c]*f^((b + 2*
c*x)^2/(4*c))*(-4*c + (b^2 - 2*b*c*x + 4*c^2*x^2)*Log[f])))/(16*c
^(7/2)*Log[f]^2)
```

Maple [A] time = 0.103, size = 214, normalized size = 1.

$$\frac{f^{cx^2+bx+a}x^2}{2c\ln(f)}-\frac{bf^{cx^2+bx+a}x}{4\ln(f)c^2}+\frac{b^2f^{cx^2+bx+a}}{8c^3\ln(f)}+\frac{b^3\sqrt{\pi}}{16c^3}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}-\frac{3b\sqrt{\pi}}{8\ln(f)c^2}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}-\frac{f^{cx^2+bx+a}}{2c^2(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*x^3,x)
```

```
[Out] 1/2*f^(c*x^2+b*x+a)*x^2/c/ln(f)-1/4*b*f^(c*x^2+b*x+a)*x/c^2/ln(f)
+1/8*b^2*f^(c*x^2+b*x+a)/c^3/ln(f)+1/16*b^3/c^3*Pi^(1/2)*f^(1/4*(
4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*
b/(-c*ln(f))^(1/2))-3/8*b/c^2/ln(f)*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c
)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))
^(1/2))-1/2*f^(c*x^2+b*x+a)/c^2/ln(f)^2
```

Maxima [A] time = 0.880951, size = 344, normalized size = 1.59

$$-\frac{\left(\frac{\sqrt{\pi}(2cx\log(f)+b\log(f))b^3\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{-\frac{(2cx\log(f)+b\log(f))^2}{c\log(f)}}\right)-1\right)\log(f)^3}{(c\log(f))^{\frac{7}{2}}\sqrt{-\frac{(2cx\log(f)+b\log(f))^2}{c\log(f)}}}-\frac{6b^2ce^{\left(\frac{(2cx\log(f)+b\log(f))^2}{4c\log(f)}\right)}\log(f)^3}{(c\log(f))^{\frac{7}{2}}}+\frac{8c^2\left(2,-\frac{(2cx\log(f)+b\log(f))^2}{4c\log(f)}\right)\log(f)^2}{(c\log(f))^{\frac{7}{2}}}-12 \cdots}{16\sqrt{c\log(f)}f^{\frac{b^2}{4c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x^3,x, algorithm="maxima")
```

```
[Out] -1/16*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^3*(erf(1/2*sqrt(-(2*c
*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^3/((c*log(f))^(7
/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 6*b^2*c*e^(1
/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^3/(c*log(f))^(7
/2) + 8*c^2*gamma(2, -1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))
*log(f)^2/(c*log(f))^(7/2) - 12*(2*c*x*log(f) + b*log(f))^3*b*gam
ma(3/2, -1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)/((c*l
og(f))^(7/2)*(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))^(3/2)))*f^
a/(sqrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.248888, size = 159, normalized size = 0.73

$$\frac{2\left(\left(4\,c^2x^2-2\,bcx+b^2\right)\log\left(f\right)-4\,c\right)\sqrt{-c\log\left(f\right)}f^{cx^2+bx+a}-\frac{\sqrt{\pi}\left(b^3\log(f)^2-6\,bc\log(f)\right)\operatorname{erf}\left(\frac{(2\,cx+b)\sqrt{-c\log(f)}}{2\,c}\right)}{f^{\frac{b^2-4\,ac}{4\,c}}}}{16\sqrt{-c\log\left(f\right)}c^3\log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/16*(2*((4*c^2*x^2 - 2*b*c*x + b^2)*log(f) - 4*c)*sqrt(-c*log(f)
)*f^(c*x^2 + b*x + a) - sqrt(pi)*(b^3*log(f)^2 - 6*b*c*log(f))*er
f(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)/f^(1/4*(b^2 - 4*a*c)/c))/(sq
rt(-c*log(f))*c^3*log(f)^2)
```

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

$$\int f^{a+bx+cx^2}x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*x**3,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*x**3, x)
```

GIAC/XCAS [A] time = 0.299912, size = 185, normalized size = 0.85

$$\frac{\frac{\sqrt{\pi}\left(b^3\ln(f)-6\,bc\right)\operatorname{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2\,x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4\,ac\ln(f)}{4\,c}\right)}}{\sqrt{-c\ln(f)}\ln(f)}+\frac{2\left(c^2\left(2\,x+\frac{b}{c}\right)^2\ln(f)-3\,bc\left(2\,x+\frac{b}{c}\right)\ln(f)+3\,b^2\ln(f)-4\,c\right)e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)\right)}}{\ln(f)^2}}{16\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x^3,x, algorithm="giac")
```

```
[Out] 1/16*(sqrt(pi)*(b^3*ln(f) - 6*b*c)*erf(-1/2*sqrt(-c*ln(f))*(2*x +
 b/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln(f))/c)/(sqrt(-c*ln(f))*ln(f)
) + 2*(c^2*(2*x + b/c)^2*ln(f) - 3*b*c*(2*x + b/c)*ln(f) + 3*b^2*
ln(f) - 4*c)*e^(c*x^2*ln(f) + b*x*ln(f) + a*ln(f))/ln(f)^2)/c^3
```

3.427 $\int f^{a+bx+cx^2}x^2\,dx$

Optimal. Leaf size=164

$$-\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\log^{\frac{3}{2}}(f)}+\frac{\sqrt{\pi}b^2f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\sqrt{\log(f)}}-\frac{bf^{a+bx+cx^2}}{4c^2\log(f)}+\frac{xf^{a+bx+cx^2}}{2c\log(f)}$$

```
[Out] -(f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*S
qrt[c])])/(4*c^(3/2)*Log[f]^(3/2)) - (b*f^(a + b*x + c*x^2))/(4*c
^2*Log[f]) + (f^(a + b*x + c*x^2)*x)/(2*c*Log[f]) + (b^2*f^(a - b
^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/
(8*c^(5/2)*Sqrt[Log[f]])
```

Rubi [A] time = 0.16718, antiderivative size = 164, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\log^{\frac{3}{2}}(f)}+\frac{\sqrt{\pi}b^2f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\sqrt{\log(f)}}-\frac{bf^{a+bx+cx^2}}{4c^2\log(f)}+\frac{xf^{a+bx+cx^2}}{2c\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*x^2,x]
```

```
[Out] -(f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*S
qrt[c])])/(4*c^(3/2)*Log[f]^(3/2)) - (b*f^(a + b*x + c*x^2))/(4*c
^2*Log[f]) + (f^(a + b*x + c*x^2)*x)/(2*c*Log[f]) + (b^2*f^(a - b
^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/
(8*c^(5/2)*Sqrt[Log[f]])
```

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

$$\frac{b^2f^{a-\frac{b^2}{4c}}\int f^{\frac{(b+2cx)^2}{4c}}\,dx}{4c^2}-\frac{bf^{a+bx+cx^2}}{4c^2\log(f)}-\frac{f^{a-\frac{b^2}{4c}}\int f^{\frac{(b+2cx)^2}{4c}}\,dx}{2c\log(f)}+\frac{f^{a+bx+cx^2}x}{2c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*x**2,x)
```

```
[Out] b**2*f**(a - b**2/(4*c))*Integral(f**((b + 2*c*x)**2/(4*c)), x)/(
4*c**2) - b*f**(a + b*x + c*x**2)/(4*c**2*log(f)) - f**(a - b**2/
(4*c))*Integral(f**((b + 2*c*x)**2/(4*c)), x)/(2*c*log(f)) + f**(
a + b*x + c*x**2)*x/(2*c*log(f))
```

Mathematica [A] time = 0.152485, size = 104, normalized size = 0.63

$$\frac{f^{a-\frac{b^2}{4c}}\left(\sqrt{\pi}\left(b^2\log(f)-2c\right)\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)-2\sqrt{c}\sqrt{\log(f)}(b-2cx)f^{\frac{(b+2cx)^2}{4c}}\right)}{8c^{5/2}\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*x^2,x]
```

```
[Out] (f^(a - b^2/(4*c))*(-2*Sqrt[c]*f^((b + 2*c*x)^2/(4*c))*(b - 2*c*x
)*Sqrt[Log[f]] + Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt
[c])]*(-2*c + b^2*Log[f])))/(8*c^(5/2)*Log[f]^(3/2))
```

Maple [A] time = 0.039, size = 165, normalized size = 1.

$$\frac{f^{cx^2+bx+a}x}{2\,c\ln(f)}-\frac{b f^{cx^2+bx+a}}{4\,c^2\ln(f)}-\frac{b^2\sqrt{\pi}}{8\,c^2}f^{\frac{4\,ac-b^2}{4\,c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}+\frac{\sqrt{\pi}}{4\,c\ln(f)}f^{\frac{4\,ac-b^2}{4\,c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*x^2,x)
```

```
[Out] 1/2*f^(c*x^2+b*x+a)*x/c/ln(f)-1/4*b*f^(c*x^2+b*x+a)/c^2/ln(f)-1/8
*b^2/c^2*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c
*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+1/4/c/ln(f)*Pi^(1/2
)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+
1/2*ln(f)*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.907997, size = 285, normalized size = 1.74

$$\frac{\left(\frac{\sqrt{\pi}(2\,cx\log(f)+b\log(f))b^2\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{-\frac{(2\,cx\log(f)+b\log(f))^2}{c\log(f)}}\right)-1\right)\log(f)^2}{(c\log(f))^{\frac{5}{2}}\sqrt{-\frac{(2\,cx\log(f)+b\log(f))^2}{c\log(f)}}}-\frac{4\,bce^{\left(\frac{(2\,cx\log(f)+b\log(f))^2}{4\,c\log(f)}\right)}\log(f)^2}{(c\log(f))^{\frac{5}{2}}}-\frac{4\,(2\,cx\log(f)+b\log(f))^3\left(\frac{3}{2},-\frac{(2\,cx\log(f)+b\log(f))^2}{4\,c\log(f)}\right.}{(c\log(f))^{\frac{5}{2}}\left(-\frac{(2\,cx\log(f)+b\log(f))^2}{c\log(f)}\right)^{\frac{3}{2}}}}{8\sqrt{c\log(f)}f^{\frac{b^2}{4\,c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x^2,x, algorithm="maxima")
```

```
[Out] 1/8*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1/2*sqrt(-(2*c*x
*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/((c*log(f))^(5/2
)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 4*b*c*e^(1/4*(
2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c*log(f))^(5/2)
- 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2*c*x*log(f) + b
*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*log(f) + b*log(
f))^2/(c*log(f)))^(3/2)))*f^a/(sqrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.274007, size = 130, normalized size = 0.79

$$\frac{2\,(2\,cx-b)\sqrt{-c\log(f)}f^{cx^2+bx+a}+\frac{\sqrt{\pi}\left(b^2\log(f)-2\,c\right)\operatorname{erf}\left(\frac{(2\,cx+b)\sqrt{-c\log(f)}}{2\,c}\right)}{f^{\frac{b^2-4\,ac}{4\,c}}}}{8\sqrt{-c\log(f)}c^2\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/8*(2*(2*c*x - b)*sqrt(-c*log(f))*f^(c*x^2 + b*x + a) + sqrt(pi)
*(b^2*log(f) - 2*c)*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)/f^(1/4
*(b^2 - 4*a*c)/c))/(sqrt(-c*log(f))*c^2*log(f))
```

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

$$\int f^{a+bx+cx^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*x**2,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*x**2, x)
```

GIAC/XCAS [A] time = 0.248247, size = 146, normalized size = 0.89

$$-\frac{\frac{\sqrt{\pi}\left(b^2\ln(f)-2\,c\right)\operatorname{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2\,x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4\,ac\ln(f)}{4\,c}\right)}}{\sqrt{-c\ln(f)}\ln(f)}-\frac{2\left(c\left(2\,x+\frac{b}{c}\right)-2\,b\right)e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)\right)}}{\ln(f)}}{8\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x^2,x, algorithm="giac")
```

```
[Out] -1/8*(sqrt(pi)*(b^2*ln(f) - 2*c)*erf(-1/2*sqrt(-c*ln(f))*(2*x + b
/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln(f))/c)/(sqrt(-c*ln(f))*ln(f))
- 2*(c*(2*x + b/c) - 2*b)*e^(c*x^2*ln(f) + b*x*ln(f) + a*ln(f))/l
n(f))/c^2
```

3.428 $\int f^{a+bx+cx^2} x \, dx$

Optimal. Leaf size=81

$$\frac{f^{a+bx+cx^2}}{2c\log(f)}-\frac{\sqrt{\pi}bf^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\sqrt{\log(f)}}$$

```
[Out] f^(a + b*x + c*x^2)/(2*c*Log[f]) - (b*f^(a - b^2/(4*c))*Sqrt[Pi]*
Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(4*c^(3/2)*Sqrt[Log
[f]])
```

Rubi [A] time = 0.0675503, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$

$$\frac{f^{a+bx+cx^2}}{2c\log(f)}-\frac{\sqrt{\pi}bf^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*x,x]
```

```
[Out] f^(a + b*x + c*x^2)/(2*c*Log[f]) - (b*f^(a - b^2/(4*c))*Sqrt[Pi]*
Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(4*c^(3/2)*Sqrt[Log
[f]])
```

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

$$-\frac{bf^{a-\frac{b^2}{4c}}\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{2c}+\frac{f^{a+bx+cx^2}}{2c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*x,x)
```

```
[Out] -b*f**(a - b**2/(4*c))*Integral(f**(b**2/(4*c) + b*x + c*x**2), x
)/(2*c) + f**(a + b*x + c*x**2)/(2*c*log(f))
```

Mathematica [A] time = 0.0708535, size = 81, normalized size = 1.

$$\frac{f^{a+bx+cx^2}}{2c\log(f)}-\frac{\sqrt{\pi}bf^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*x,x]
```

```
[Out] f^(a + b*x + c*x^2)/(2*c*Log[f]) - (b*f^(a - b^2/(4*c))*Sqrt[Pi]*
Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(4*c^(3/2)*Sqrt[Log
[f]])
```

Maple [A] time = 0.033, size = 80, normalized size = 1.

$$\frac{f^{cx^2+bx+a}}{2c\ln(f)}+\frac{b\sqrt{\pi}}{4c}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*x,x)
```

```
[Out] 1/2*f^(c*x^2+b*x+a)/c/ln(f)+1/4*b/c*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c
)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))
^(1/2))
```

Maxima [A] time = 0.812306, size = 182, normalized size = 2.25

$$-\frac{\left(\frac{\sqrt{\pi}(2\,cx\log(f)+b\log(f))b\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{-\frac{(2\,cx\log(f)+b\log(f))^2}{c\log(f)}}\right)-1\right)\log(f)}{(c\log(f))^{\frac{3}{2}}\sqrt{-\frac{(2\,cx\log(f)+b\log(f))^2}{c\log(f)}}}-\frac{2\,ce^{\left(\frac{(2\,cx\log(f)+b\log(f))^2}{4\,c\log(f)}\right)}\log(f)}{(c\log(f))^{\frac{3}{2}}}\right)f^a}{4\sqrt{c\log(f)}f^{\frac{b^2}{4c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x,x, algorithm="maxima")
```

```
[Out] -1/4*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*
log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)/((c*log(f))^(3/2)*s
qrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x
*log(f) + b*log(f))^2/(c*log(f)))*log(f)/(c*log(f))^(3/2))*f^a/(s
qrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.257668, size = 109, normalized size = 1.35

$$-\frac{\frac{\sqrt{\pi}b\operatorname{erf}\left(\frac{(2\,cx+b)\sqrt{-c\log(f)}}{2\,c}\right)\log(f)}{f^{\frac{b^2-4\,ac}{4\,c}}}-2\sqrt{-c\log(f)}f^{cx^2+bx+a}}{4\sqrt{-c\log(f)}c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x,x, algorithm="fricas")
```

```
[Out] -1/4*(sqrt(pi)*b*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)*log(f)/f^
(1/4*(b^2 - 4*a*c)/c) - 2*sqrt(-c*log(f))*f^(c*x^2 + b*x + a))/(s
qrt(-c*log(f))*c*log(f))
```

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

$$\int f^{a+bx+cx^2}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*x,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*x, x)
```

GIAC/XCAS [A] time = 0.260188, size = 108, normalized size = 1.33

$$\frac{\frac{\sqrt{\pi}b\,\mathrm{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4ac\ln(f)}{4c}\right)}}{\sqrt{-c\ln(f)}}+\frac{2e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)\right)}}{\ln(f)}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)*x,x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(pi)*b*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2
*ln(f) - 4*a*c*ln(f))/c)/sqrt(-c*ln(f)) + 2*e^(c*x^2*ln(f) + b*x*
ln(f) + a*ln(f))/ln(f))/c
```

3.429 $\int f^{a+bx+cx^2}\,dx$

Optimal. Leaf size=56

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{2\sqrt{c}\sqrt{\log(f)}}$$

```
[Out] (f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sq
rt[c])])/(2*Sqrt[c]*Sqrt[Log[f]])
```

Rubi [A] time = 0.0313241, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{2\sqrt{c}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2),x]
```

```
[Out] (f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sq
rt[c])])/(2*Sqrt[c]*Sqrt[Log[f]])
```

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

$$f^{a-\frac{b^2}{4c}}\int f^{\frac{(b+2cx)^2}{4c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a),x)
```

```
[Out] f**(a - b**2/(4*c))*Integral(f**((b + 2*c*x)**2/(4*c)), x)
```

Mathematica [A] time = 0.0123187, size = 56, normalized size = 1.

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{2\sqrt{c}\sqrt{\log(f)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2),x]
```

```
[Out] (f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sq
rt[c])])/(2*Sqrt[c]*Sqrt[Log[f]])
```

Maple [A] time = 0.029, size = 54, normalized size = 1.

$$-\frac{\sqrt{\pi}}{2}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(f^(c*x^2+b*x+a),x)
```

```
[Out] -1/2*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(
f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.808017, size = 68, normalized size = 1.21

$$\frac{\sqrt{\pi} f^{a} \operatorname{erf}\left(\sqrt{-c \log\left(f\right)} x - \frac{b \log\left(f\right)}{2 \sqrt{-c \log\left(f\right)}}\right)}{2 \sqrt{-c \log\left(f\right)} f^{\frac{b^{2}}{4 \, c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*f^a*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c*log
(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.262614, size = 65, normalized size = 1.16

$$\frac{\sqrt{\pi} \operatorname{erf}\left(\frac{{\left(2 \, c x + b\right)} \sqrt{-c \log\left(f\right)}}{2 \, c}\right)}{2 \sqrt{-c \log\left(f\right)} f^{\frac{b^{2} - 4 \, a c}{4 \, c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)/(sqrt(-c*log(
f))*f^(1/4*(b^2 - 4*a*c)/c))
```

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

$$\int f^{a + b x + c x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(f**(c*x**2+b*x+a),x)
```

```
[Out] Integral(f**(a + b*x + c*x**2), x)
```

GIAC/XCAS [A] time = 0.254613, size = 68, normalized size = 1.21

$$-\frac{\sqrt{\pi} \operatorname{erf}\left(-\frac{1}{2} \, \sqrt{-c{\rm ln}\left(f\right)}{\left(2 \, x + \frac{b}{c}\right)}\right) e^{\left(-\frac{b^{2}{\rm ln}\left(f\right) - 4 \, a c{\rm ln}\left(f\right)}{4 \, c}\right)}}{2 \, \sqrt{-c{\rm ln}\left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*l
n(f) - 4*a*c*ln(f))/c)/sqrt(-c*ln(f))
```

3.430 $\int \frac{f^{a+bx+cx^2}}{x} dx$

Optimal. Leaf size=19

$$\operatorname{Int}\left(\frac{f^{a+bx+cx^2}}{x},x\right)$$

```
[Out] Unintegrable[f^(a + b*x + c*x^2)/x, x]
```

Rubi [A] time = 0.039171, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\operatorname{Int}\left(\frac{f^{a+bx+cx^2}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(a + b*x + c*x^2)/x,x]

[Out] Defer[Int][f^(a + b*x + c*x^2)/x, x]
```

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

$$\int \frac{f^{a+bx+cx^2}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/x,x)

[Out] Integral(f**(a + b*x + c*x**2)/x, x)
```

Mathematica [A] time = 0.131603, size = 0, normalized size = 0.

$$\int \frac{f^{a+bx+cx^2}}{x} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x + c*x^2)/x,x]

[Out] Integrate[f^(a + b*x + c*x^2)/x, x]
```

Maple [A] time = 0.016, size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/x,x)

[Out] int(f^(c*x^2+b*x+a)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x + a)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{cx^2+bx+a}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(c*x^2 + b*x + a)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+bx+cx^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/x,x)

[Out] Integral(f**(a + b*x + c*x**2)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x + a)/x, x)
```

3.431 $\int \frac{f^{a+bx+cx^2}}{x^2}\,dx$

Optimal. Leaf size=94

$$b\log(f)\mathrm{Int}\left(\frac{f^{a+bx+cx^2}}{x},x\right)+\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)-\frac{f^{a+bx+cx^2}}{x}$$

```
[Out] -(f^(a + b*x + c*x^2)/x) + Sqrt[c]*f^(a - b^2/(4*c))*Sqrt[Pi]*Erf
i[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]] + b*Log[f]
*Unintegrable[f^(a + b*x + c*x^2)/x, x]
```

Rubi [A] time = 0.119101, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\mathrm{Int}\left(\frac{f^{a+bx+cx^2}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(a + b*x + c*x^2)/x^2,x]
```

```
[Out] -(f^(a + b*x + c*x^2)/x) + Sqrt[c]*f^(a - b^2/(4*c))*Sqrt[Pi]*Erf
i[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]] + b*Log[f]
*Defer[Int][f^(a + b*x + c*x^2)/x, x]
```

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

$$b\log(f)\int\frac{f^{a+bx+cx^2}}{x}\,dx+2cf^{a-\frac{b^2}{4c}}\log(f)\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx-\frac{f^{a+bx+cx^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/x**2,x)
```

```
[Out] b*log(f)*Integral(f**(a + b*x + c*x**2)/x, x) + 2*c*f**(a - b**2/
(4*c))*log(f)*Integral(f**(b**2/(4*c) + b*x + c*x**2), x) - f**(a
 + b*x + c*x**2)/x
```

Mathematica [A] time = 0.420269, size = 0, normalized size = 0.

$$\int\frac{f^{a+bx+cx^2}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x + c*x^2)/x^2,x]
```

```
[Out] Integrate[f^(a + b*x + c*x^2)/x^2, x]
```

Maple [A] time = 0.025, size = 0, normalized size = 0.

$$\int\frac{f^{cx^2+bx+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/x^2,x)

[Out] int(f^(c*x^2+b*x+a)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x + a)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{cx^2+bx+a}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(f^(c*x^2 + b*x + a)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+bx+cx^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/x**2,x)

[Out] Integral(f**(a + b*x + c*x**2)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x + a)/x^2, x)
```

3.432 $\int e^{a+bx-cx^2}x^3\,dx$

Optimal. Leaf size=181

$$-\frac{3\sqrt{\pi}be^{a+\frac{b^2}{4c}}\mathrm{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{8c^{5/2}}-\frac{b^2e^{a+bx-cx^2}}{8c^3}-\frac{\sqrt{\pi}b^3e^{a+\frac{b^2}{4c}}\mathrm{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{16c^{7/2}}-\frac{bxe^{a+bx-cx^2}}{4c^2}-\frac{e^{a+bx-cx^2}}{2c^2}-\frac{x^2e^{a+bx-cx^2}}{2c}$$

```
[Out] -(b^2*E^(a + b*x - c*x^2))/(8*c^3) - E^(a + b*x - c*x^2)/(2*c^2)
- (b*E^(a + b*x - c*x^2)*x)/(4*c^2) - (E^(a + b*x - c*x^2)*x^2)/(
2*c) - (b^3*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[c]
)])/(16*c^(7/2)) - (3*b*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x
)/(2*Sqrt[c])])/(8*c^(5/2))
```

Rubi [A] time = 0.288438, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{3\sqrt{\pi}be^{a+\frac{b^2}{4c}}\mathrm{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{8c^{5/2}}-\frac{b^2e^{a+bx-cx^2}}{8c^3}-\frac{\sqrt{\pi}b^3e^{a+\frac{b^2}{4c}}\mathrm{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{16c^{7/2}}-\frac{bxe^{a+bx-cx^2}}{4c^2}-\frac{e^{a+bx-cx^2}}{2c^2}-\frac{x^2e^{a+bx-cx^2}}{2c}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x - c*x^2)*x^3,x]
```

```
[Out] -(b^2*E^(a + b*x - c*x^2))/(8*c^3) - E^(a + b*x - c*x^2)/(2*c^2)
- (b*E^(a + b*x - c*x^2)*x)/(4*c^2) - (E^(a + b*x - c*x^2)*x^2)/(
2*c) - (b^3*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[c]
)])/(16*c^(7/2)) - (3*b*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x
)/(2*Sqrt[c])])/(8*c^(5/2))
```

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

$$\frac{b^3e^{a+\frac{b^2}{4c}}\int e^{-\frac{b^2}{4c}+bx-cx^2}\,dx}{8c^3}-\frac{b^2e^{a+bx-cx^2}}{8c^3}-\frac{bxe^{a+bx-cx^2}}{4c^2}+\frac{3be^{a+\frac{b^2}{4c}}\int e^{-\frac{b^2}{4c}+bx-cx^2}\,dx}{4c^2}-\frac{x^2e^{a+bx-cx^2}}{2c}-\frac{e^{a+bx-cx^2}}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(-c*x**2+b*x+a)*x**3,x)
```

```
[Out] b**3*exp(a + b**2/(4*c))*Integral(exp(-b**2/(4*c) + b*x - c*x**2)
, x)/(8*c**3) - b**2*exp(a + b*x - c*x**2)/(8*c**3) - b*x*exp(a +
 b*x - c*x**2)/(4*c**2) + 3*b*exp(a + b**2/(4*c))*Integral(exp(-b
**2/(4*c) + b*x - c*x**2), x)/(4*c**2) - x**2*exp(a + b*x - c*x**
2)/(2*c) - exp(a + b*x - c*x**2)/(2*c**2)
```

Mathematica [A] time = 0.305889, size = 91, normalized size = 0.5

$$-\frac{e^a\left(\sqrt{\pi}b\left(b^2+6c\right)e^{\frac{b^2}{4c}}\mathrm{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)+2\sqrt{c}e^{x(b-cx)}\left(b^2+2bcx+4c\left(cx^2+1\right)\right)\right)}{16c^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x - c*x^2)*x^3,x]
```

```
[Out] -(E^a*(2*Sqrt[c]*E^(x*(b - c*x))*(b^2 + 2*b*c*x + 4*c*(1 + c*x^2)
) + b*(b^2 + 6*c)*E^(b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[
c])]))/(16*c^(7/2))
```

Maple [A] time = 0.01, size = 194, normalized size = 1.1

$$-\frac{e^{-cx^2+bx+a}x^2}{2c} + \frac{b}{2c}\left(-\frac{e^{-cx^2+bx+a}x}{2c} + \frac{b}{2c}\left(-\frac{e^{-cx^2+bx+a}}{2c} - \frac{b\sqrt{\pi}}{4}e^{a+\frac{b^2}{4c}}Erf\left(-\sqrt{c}x + \frac{b}{2}\frac{1}{\sqrt{c}}\right)c^{-\frac{3}{2}}\right) - \frac{\sqrt{\pi}}{4}e^{a+\frac{b^2}{4c}}Erf\left(-\sqrt{c}x + \frac{b}{2}\frac{1}{\sqrt{c}}\right)c^{-\frac{3}{2}}\right) + \frac{1}{c}\left(-\frac{e^{-cx^2+bx+a}}{2c} - \frac{b\sqrt{\pi}}{4}e^{a+\frac{b^2}{4c}}Erf\left(-\sqrt{c}x + \frac{b}{2}\frac{1}{\sqrt{c}}\right)c^{-\frac{3}{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(-c*x^2+b*x+a)*x^3,x)
```

```
[Out] -1/2*exp(-c*x^2+b*x+a)*x^2/c+1/2*b/c*(-1/2*exp(-c*x^2+b*x+a)*x/c+
1/2*b/c*(-1/2*exp(-c*x^2+b*x+a)/c-1/4*b/c^(3/2)*Pi^(1/2)*exp(a+1/
4*b^2/c)*erf(-c^(1/2)*x+1/2*b/c^(1/2)))-1/4/c^(3/2)*Pi^(1/2)*exp(
a+1/4*b^2/c)*erf(-c^(1/2)*x+1/2*b/c^(1/2)))+1/c*(-1/2*exp(-c*x^2+
b*x+a)/c-1/4*b/c^(3/2)*Pi^(1/2)*exp(a+1/4*b^2/c)*erf(-c^(1/2)*x+1
/2*b/c^(1/2)))
```

Maxima [A] time = 0.814027, size = 244, normalized size = 1.35

$$\frac{\left(\frac{\sqrt{\pi}(2\,cx-b)b^3\left(\mathrm{erf}\left(\frac{1}{2}\sqrt{\frac{(2\,cx-b)^2}{c}}\right)-1\right)}{\sqrt{\frac{(2\,cx-b)^2}{c}}(-c)^{\frac{7}{2}}} - \frac{6\,b^2ce^{\left(-\frac{(2\,cx-b)^2}{4\,c}\right)}}{(-c)^{\frac{7}{2}}} - \frac{12\,(2\,cx-b)^3b\left(\frac{3}{2},\frac{(2\,cx-b)^2}{4\,c}\right)}{\left(\frac{(2\,cx-b)^2}{c}\right)^{\frac{3}{2}}(-c)^{\frac{7}{2}}} - \frac{8\,c^2\left(2,\frac{(2\,cx-b)^2}{4\,c}\right)}{(-c)^{\frac{7}{2}}}\right)e^{\left(a+\frac{b^2}{4\,c}\right)}}{16\,\sqrt{-c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(-c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/16*(sqrt(pi)*(2*c*x - b)*b^3*(erf(1/2*sqrt((2*c*x - b)^2/c)) -
1)/(sqrt((2*c*x - b)^2/c)*(-c)^(7/2)) - 6*b^2*c*e^(-1/4*(2*c*x -
b)^2/c)/(-c)^(7/2) - 12*(2*c*x - b)^3*b*gamma(3/2, 1/4*(2*c*x - b
)^2/c)/(((2*c*x - b)^2/c)^(3/2)*(-c)^(7/2)) - 8*c^2*gamma(2, 1/4*
(2*c*x - b)^2/c)/(-c)^(7/2))*e^(a + 1/4*b^2/c)/sqrt(-c)
```

Fricas [A] time = 0.270917, size = 112, normalized size = 0.62

$$\frac{\sqrt{\pi}\left(b^3+6\,bc\right)\mathrm{erf}\left(\frac{2\,cx-b}{2\,\sqrt{c}}\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)} - 2\left(4\,c^2x^2+2\,bcx+b^2+4\,c\right)\sqrt{c}e^{\left(-cx^2+bx+a\right)}}{16\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(-c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] 1/16*(sqrt(pi)*(b^3 + 6*b*c)*erf(1/2*(2*c*x - b)/sqrt(c))*e^(1/4*
(b^2 + 4*a*c)/c) - 2*(4*c^2*x^2 + 2*b*c*x + b^2 + 4*c)*sqrt(c)*e^
(-c*x^2 + b*x + a))/c^(7/2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(-c*x**2+b*x+a)*x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.228239, size = 140, normalized size = 0.77

$$-\frac{\frac{\sqrt{\pi}\left(b^{3}+6\,bc\right)\operatorname{erf}\left(-\frac{1}{2}\,\sqrt{c}\left(2\,x-\frac{b}{c}\right)\right)e^{\left(\frac{b^{2}+4\,ac}{4\,c}\right)}}{\sqrt{c}}+2\left(c^{2}\left(2\,x-\frac{b}{c}\right)^{2}+3\,bc\left(2\,x-\frac{b}{c}\right)+3\,b^{2}+4\,c\right)e^{\left(-cx^{2}+bx+a\right)}}{16\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*e^(-c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] -1/16*(sqrt(pi)*(b^3 + 6*b*c)*erf(-1/2*sqrt(c)*(2*x - b/c))*e^(1/
4*(b^2 + 4*a*c)/c)/sqrt(c) + 2*(c^2*(2*x - b/c)^2 + 3*b*c*(2*x -
b/c) + 3*b^2 + 4*c)*e^(-c*x^2 + b*x + a))/c^3
```

3.433 $\int e^{a+bx-cx^2}x^2\,dx$

Optimal. Leaf size=134

$$-\frac{\sqrt{\pi}b^2e^{a+\frac{b^2}{4c}}\text{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{8c^{5/2}}-\frac{\sqrt{\pi}e^{a+\frac{b^2}{4c}}\text{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{be^{a+bx-cx^2}}{4c^2}-\frac{xe^{a+bx-cx^2}}{2c}$$

```
[Out] -(b*E^(a + b*x - c*x^2))/(4*c^2) - (E^(a + b*x - c*x^2)*x)/(2*c)
- (b^2*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[c])])/(
8*c^(5/2)) - (E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[
c])])/(4*c^(3/2))
```

Rubi [A] time = 0.140269, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{\sqrt{\pi}b^2e^{a+\frac{b^2}{4c}}\text{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{8c^{5/2}}-\frac{\sqrt{\pi}e^{a+\frac{b^2}{4c}}\text{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{be^{a+bx-cx^2}}{4c^2}-\frac{xe^{a+bx-cx^2}}{2c}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x - c*x^2)*x^2,x]
```

```
[Out] -(b*E^(a + b*x - c*x^2))/(4*c^2) - (E^(a + b*x - c*x^2)*x)/(2*c)
- (b^2*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[c])])/(
8*c^(5/2)) - (E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[
c])])/(4*c^(3/2))
```

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

$$\frac{b^2e^{a+\frac{b^2}{4c}}\int e^{-\frac{(b-2cx)^2}{4c}}\,dx}{4c^2}-\frac{be^{a+bx-cx^2}}{4c^2}-\frac{xe^{a+bx-cx^2}}{2c}+\frac{e^{a+\frac{b^2}{4c}}\int e^{-\frac{(b-2cx)^2}{4c}}\,dx}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(-c*x**2+b*x+a)*x**2,x)
```

```
[Out] b**2*exp(a + b**2/(4*c))*Integral(exp(-(b - 2*c*x)**2/(4*c)), x)/
(4*c**2) - b*exp(a + b*x - c*x**2)/(4*c**2) - x*exp(a + b*x - c*x
**2)/(2*c) + exp(a + b**2/(4*c))*Integral(exp(-(b - 2*c*x)**2/(4*
c)), x)/(2*c)
```

Mathematica [A] time = 0.172262, size = 79, normalized size = 0.59

$$\frac{e^a\left(\sqrt{\pi}\left(b^2+2c\right)e^{\frac{b^2}{4c}}\text{Erf}\left(\frac{2cx-b}{2\sqrt{c}}\right)-2\sqrt{c}e^{x(b-cx)}(b+2cx)\right)}{8c^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x - c*x^2)*x^2,x]
```

```
[Out] (E^a*(-2*Sqrt[c]*E^(x*(b - c*x))*(b + 2*c*x) + (b^2 + 2*c)*E^(b^2
/(4*c))*Sqrt[Pi]*Erf[(-b + 2*c*x)/(2*Sqrt[c])]))/(8*c^(5/2))
```

Maple [A] time = 0.009, size = 111, normalized size = 0.8

$$-\frac{\mathrm{e}^{-cx^2+bx+a}x}{2c}+\frac{b}{2c}\left(-\frac{\mathrm{e}^{-cx^2+bx+a}}{2c}-\frac{b\sqrt{\pi}}{4}\mathrm{e}^{a+\frac{b^2}{4c}}Erf\left(-\sqrt{c}x+\frac{b}{2}\frac{1}{\sqrt{c}}\right)c^{-\frac{3}{2}}\right)-\frac{\sqrt{\pi}}{4}\mathrm{e}^{a+\frac{b^2}{4c}}Erf\left(-\sqrt{c}x+\frac{b}{2}\frac{1}{\sqrt{c}}\right)c^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(exp(-c*x^2+b*x+a)*x^2,x)
```

```
[Out] -1/2*exp(-c*x^2+b*x+a)*x/c+1/2*b/c*(-1/2*exp(-c*x^2+b*x+a)/c-1/4*
b/c^(3/2)*Pi^(1/2)*exp(a+1/4*b^2/c)*erf(-c^(1/2)*x+1/2*b/c^(1/2))
)-1/4/c^(3/2)*Pi^(1/2)*exp(a+1/4*b^2/c)*erf(-c^(1/2)*x+1/2*b/c^(1
/2))
```

Maxima [A] time = 0.860744, size = 204, normalized size = 1.52

$$-\frac{\left(\frac{\sqrt{\pi}(2\,cx-b)b^2\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{\frac{(2\,cx-b)^2}{c}}\right)-1\right)}{\sqrt{\frac{(2\,cx-b)^2}{c}}(-c)^{\frac{5}{2}}}-\frac{4\,bce^{\left(-\frac{(2\,cx-b)^2}{4\,c}\right)}}{(-c)^{\frac{5}{2}}}-\frac{4\,(2\,cx-b)^3\Gamma\left(\frac{3}{2},\frac{(2\,cx-b)^2}{4\,c}\right)}{\left(\frac{(2\,cx-b)^2}{c}\right)^{\frac{3}{2}}(-c)^{\frac{5}{2}}}\right)e^{\left(a+\frac{b^2}{4\,c}\right)}}{8\sqrt{-c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x^2*e^(-c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] -1/8*(sqrt(pi)*(2*c*x - b)*b^2*(erf(1/2*sqrt((2*c*x - b)^2/c)) -
1)/(sqrt((2*c*x - b)^2/c)*(-c)^(5/2)) - 4*b*c*e^(-1/4*(2*c*x - b)
^2/c)/(-c)^(5/2) - 4*(2*c*x - b)^3*gamma(3/2, 1/4*(2*c*x - b)^2/c
)/(((2*c*x - b)^2/c)^(3/2)*(-c)^(5/2)))*e^(a + 1/4*b^2/c)/sqrt(-c
)
```

Fricas [A] time = 0.254054, size = 92, normalized size = 0.69

$$\frac{\sqrt{\pi}\left(b^2+2\,c\right)\operatorname{erf}\left(\frac{2\,cx-b}{2\,\sqrt{c}}\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)}-2\,(2\,cx+b)\sqrt{c}e^{\left(-cx^2+bx+a\right)}}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x^2*e^(-c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(pi)*(b^2 + 2*c)*erf(1/2*(2*c*x - b)/sqrt(c))*e^(1/4*(b^
2 + 4*a*c)/c) - 2*(2*c*x + b)*sqrt(c)*e^(-c*x^2 + b*x + a))/c^(5/
2)
```

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

$$e^a\int x^2e^{bx}e^{-cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(exp(-c*x**2+b*x+a)*x**2,x)
```

```
[Out] exp(a)*Integral(x**2*exp(b*x)*exp(-c*x**2), x)
```

GIAC/XCAS [A] time = 0.258254, size = 108, normalized size = 0.81

$$-\frac{\frac{\sqrt{\pi}\left(b^2+2\,c\right)\,\mathrm{erf}\left(-\frac{1}{2}\,\sqrt{c}\left(2\,x-\frac{b}{c}\right)\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)}}{\sqrt{c}}+2\,\left(c\left(2\,x-\frac{b}{c}\right)+2\,b\right)e^{\left(-cx^2+bx+a\right)}}{8\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*e^(-c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] -1/8*(sqrt(pi)*(b^2 + 2*c)*erf(-1/2*sqrt(c)*(2*x - b/c))*e^(1/4*(
b^2 + 4*a*c)/c)/sqrt(c) + 2*(c*(2*x - b/c) + 2*b)*e^(-c*x^2 + b*x
 + a))/c^2
```

3.434 $\int e^{a+bx-cx^2}x\,dx$

Optimal. Leaf size=66

$$-\frac{\sqrt{\pi}be^{a+\frac{b^2}{4c}}\operatorname{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{e^{a+bx-cx^2}}{2c}$$

```
[Out] -E^(a + b*x - c*x^2)/(2*c) - (b*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b
 - 2*c*x)/(2*Sqrt[c])])/(4*c^(3/2))
```

Rubi [A] time = 0.0572994, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{\sqrt{\pi}be^{a+\frac{b^2}{4c}}\operatorname{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{e^{a+bx-cx^2}}{2c}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x - c*x^2)*x,x]
```

```
[Out] -E^(a + b*x - c*x^2)/(2*c) - (b*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b
 - 2*c*x)/(2*Sqrt[c])])/(4*c^(3/2))
```

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

$$\frac{be^{a+\frac{b^2}{4c}}\int e^{-\frac{b^2}{4c}+bx-cx^2}\,dx}{2c}-\frac{e^{a+bx-cx^2}}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(-c*x**2+b*x+a)*x,x)
```

```
[Out] b*exp(a + b**2/(4*c))*Integral(exp(-b**2/(4*c) + b*x - c*x**2), x
)/(2*c) - exp(a + b*x - c*x**2)/(2*c)
```

Mathematica [A] time = 0.0523182, size = 68, normalized size = 1.03

$$\frac{\sqrt{\pi}be^{a+\frac{b^2}{4c}}\operatorname{Erf}\left(\frac{2cx-b}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{e^{a+bx-cx^2}}{2c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x - c*x^2)*x,x]
```

```
[Out] -E^(a + b*x - c*x^2)/(2*c) + (b*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(-
b + 2*c*x)/(2*Sqrt[c])])/(4*c^(3/2))
```

Maple [A] time = 0.004, size = 53, normalized size = 0.8

$$-\frac{e^{-cx^2+bx+a}}{2\,c}-\frac{b\sqrt{\pi}}{4}e^{a+\frac{b^2}{4\,c}}Erf\left(-\sqrt{c}x+\frac{b}{2}\frac{1}{\sqrt{c}}\right)c^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(-c*x^2+b*x+a)*x,x)
```

```
[Out] -1/2*exp(-c*x^2+b*x+a)/c-1/4*b/c^(3/2)*Pi^(1/2)*exp(a+1/4*b^2/c)*
erf(-c^(1/2)*x+1/2*b/c^(1/2))
```

Maxima [A] time = 0.818914, size = 132, normalized size = 2.

$$\frac{\left(\frac{\sqrt{\pi}(2\,cx-b)b\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{\frac{(2\,cx-b)^2}{c}}\right)-1\right)}{\sqrt{\frac{(2\,cx-b)^2}{c}}(-c)^{\frac{3}{2}}}-\frac{2\,ce^{\left(-\frac{(2\,cx-b)^2}{4\,c}\right)}}{(-c)^{\frac{3}{2}}}\right)e^{\left(a+\frac{b^2}{4\,c}\right)}}{4\sqrt{-c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(-c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/4*(sqrt(pi)*(2*c*x - b)*b*(erf(1/2*sqrt((2*c*x - b)^2/c)) - 1)/
(sqrt((2*c*x - b)^2/c)*(-c)^(3/2)) - 2*c*e^(-1/4*(2*c*x - b)^2/c)
/(-c)^(3/2))*e^(a + 1/4*b^2/c)/sqrt(-c)
```

Fricas [A] time = 0.381249, size = 76, normalized size = 1.15

$$\frac{\sqrt{\pi}b\operatorname{erf}\left(\frac{2\,cx-b}{2\sqrt{c}}\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)}-2\sqrt{c}e^{\left(-cx^2+bx+a\right)}}{4\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(-c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] 1/4*(sqrt(pi)*b*erf(1/2*(2*c*x - b)/sqrt(c))*e^(1/4*(b^2 + 4*a*c)
/c) - 2*sqrt(c)*e^(-c*x^2 + b*x + a))/c^(3/2)
```

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

$$e^{a}\int xe^{bx}e^{-cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(-c*x**2+b*x+a)*x,x)
```

```
[Out] exp(a)*Integral(x*exp(b*x)*exp(-c*x**2), x)
```

GIAC/XCAS [A] time = 0.257372, size = 78, normalized size = 1.18

$$-\frac{\frac{\sqrt{\pi}b\operatorname{erf}\left(-\frac{1}{2}\sqrt{c}\left(2\,x-\frac{b}{c}\right)\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)}}{\sqrt{c}}+2\,e^{\left(-cx^2+bx+a\right)}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(-c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] -1/4*(sqrt(pi)*b*erf(-1/2*sqrt(c)*(2*x - b/c))*e^(1/4*(b^2 + 4*a*
c)/c)/sqrt(c) + 2*e^(-c*x^2 + b*x + a))/c
```

3.435 $\int e^{a+bx-cx^2}\,dx$

Optimal. Leaf size=44

$$-\frac{\sqrt{\pi}e^{a+\frac{b^2}{4c}}\operatorname{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{2\sqrt{c}}$$

```
[Out] -(E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[c])])/(2*Sqr
t[c])
```

Rubi [A] time = 0.0228205, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{\sqrt{\pi}e^{a+\frac{b^2}{4c}}\operatorname{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x - c*x^2),x]
```

```
[Out] -(E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(b - 2*c*x)/(2*Sqrt[c])])/(2*Sqr
t[c])
```

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

$$e^{a+\frac{b^2}{4c}}\int e^{-\frac{(b-2cx)^2}{4c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(-c*x**2+b*x+a),x)
```

```
[Out] exp(a + b**2/(4*c))*Integral(exp(-(b - 2*c*x)**2/(4*c)), x)
```

Mathematica [A] time = 0.00813621, size = 46, normalized size = 1.05

$$\frac{\sqrt{\pi}e^{a+\frac{b^2}{4c}}\operatorname{Erf}\left(\frac{2cx-b}{2\sqrt{c}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x - c*x^2),x]
```

```
[Out] (E^(a + b^2/(4*c))*Sqrt[Pi]*Erf[(-b + 2*c*x)/(2*Sqrt[c])])/(2*Sqr
t[c])
```

Maple [A] time = 0.004, size = 34, normalized size = 0.8

$$-\frac{\sqrt{\pi}}{2}e^{a+\frac{b^2}{4c}}Erf\left(-\sqrt{c}x+\frac{b}{2}\frac{1}{\sqrt{c}}\right)\frac{1}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(exp(-c*x^2+b*x+a),x)
```

```
[Out] -1/2*Pi^(1/2)*exp(a+1/4*b^2/c)/c^(1/2)*erf(-c^(1/2)*x+1/2*b/c^(1/
2))
```

Maxima [A] time = 0.779849, size = 43, normalized size = 0.98

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(\sqrt{c}x-\frac{b}{2\sqrt{c}}\right)e^{\left(a+\frac{b^2}{4c}\right)}}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(-c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*erf(sqrt(c)*x - 1/2*b/sqrt(c))*e^(a + 1/4*b^2/c)/sqr
t(c)
```

Fricas [A] time = 0.284558, size = 49, normalized size = 1.11

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(\frac{2\,cx-b}{2\sqrt{c}}\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)}}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(-c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*erf(1/2*(2*c*x - b)/sqrt(c))*e^(1/4*(b^2 + 4*a*c)/c)
/sqrt(c)
```

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

$$e^{a}\int e^{bx}e^{-cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(exp(-c*x**2+b*x+a),x)
```

```
[Out] exp(a)*Integral(exp(b*x)*exp(-c*x**2), x)
```

GIAC/XCAS [A] time = 0.247804, size = 51, normalized size = 1.16

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\frac{1}{2}\sqrt{c}\left(2\,x-\frac{b}{c}\right)\right)e^{\left(\frac{b^2+4\,ac}{4\,c}\right)}}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(-c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-1/2*sqrt(c)*(2*x - b/c))*e^(1/4*(b^2 + 4*a*c)/
c)/sqrt(c)
```

3.436 $\int \frac{e^{a+bx-cx^2}}{x} dx$

Optimal. Leaf size=20

$$\text{Int}\left(\frac{e^{a+bx-cx^2}}{x},x\right)$$

```
[Out] Unintegrable[E^(a + b*x - c*x^2)/x, x]
```

Rubi [A] time = 0.0415549, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{a+bx-cx^2}}{x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^(a + b*x - c*x^2)/x,x]

[Out] Defer[Int][E^(a + b*x - c*x^2)/x, x]
```

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

$$\int \frac{e^{a+bx-cx^2}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(-c*x**2+b*x+a)/x,x)

[Out] Integral(exp(a + b*x - c*x**2)/x, x)
```

Mathematica [A] time = 0.155808, size = 0, normalized size = 0.

$$\int \frac{e^{a+bx-cx^2}}{x} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a + b*x - c*x^2)/x,x]

[Out] Integrate[E^(a + b*x - c*x^2)/x, x]
```

Maple [A] time = 0.02, size = 0, normalized size = 0.

$$\int \frac{e^{-cx^2+bx+a}}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(-c*x^2+b*x+a)/x,x)

[Out] int(exp(-c*x^2+b*x+a)/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(-cx^2+bx+a\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-c*x^2 + b*x + a)/x,x, algorithm="maxima")

[Out] integrate(e^(-c*x^2 + b*x + a)/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(-cx^2+bx+a\right)}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-c*x^2 + b*x + a)/x,x, algorithm="fricas")

[Out] integral(e^(-c*x^2 + b*x + a)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$e^{a} \int \frac{e^{bx} e^{-cx^{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(-c*x**2+b*x+a)/x,x)

[Out] exp(a)*Integral(exp(b*x)*exp(-c*x**2)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(-cx^2+bx+a\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-c*x^2 + b*x + a)/x,x, algorithm="giac")

[Out] integrate(e^(-c*x^2 + b*x + a)/x, x)
```

3.437 $\int \frac{e^{a+bx-cx^2}}{x^2} \, dx$

Optimal. Leaf size=82

$$b\text{Int}\left(\frac{e^{a+bx-cx^2}}{x},x\right)+\sqrt{\pi}\sqrt{c}e^{a+\frac{b^2}{4c}}\text{Erf}\left(\frac{b-2cx}{2\sqrt{c}}\right)-\frac{e^{a+bx-cx^2}}{x}$$

```
[Out] -(E^(a + b*x - c*x^2)/x) + Sqrt[c]*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf
[(b - 2*c*x)/(2*Sqrt[c])] + b*Unintegrable[E^(a + b*x - c*x^2)/x,
 x]
```

Rubi [A] time = 0.111859, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{a+bx-cx^2}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[E^(a + b*x - c*x^2)/x^2,x]
```

```
[Out] -(E^(a + b*x - c*x^2)/x) + Sqrt[c]*E^(a + b^2/(4*c))*Sqrt[Pi]*Erf
[(b - 2*c*x)/(2*Sqrt[c])] + b*Defer[Int][E^(a + b*x - c*x^2)/x, x
]
```

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

$$b\int\frac{e^{a+bx-cx^2}}{x}\,dx-2ce^{a+\frac{b^2}{4c}}\int e^{-\frac{b^2}{4c}+bx-cx^2}\,dx-\frac{e^{a+bx-cx^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(-c*x**2+b*x+a)/x**2,x)
```

```
[Out] b*Integral(exp(a + b*x - c*x**2)/x, x) - 2*c*exp(a + b**2/(4*c))*
Integral(exp(-b**2/(4*c) + b*x - c*x**2), x) - exp(a + b*x - c*x*
*2)/x
```

Mathematica [A] time = 0.260419, size = 0, normalized size = 0.

$$\int\frac{e^{a+bx-cx^2}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^(a + b*x - c*x^2)/x^2,x]
```

```
[Out] Integrate[E^(a + b*x - c*x^2)/x^2, x]
```

Maple [A] time = 0.024, size = 0, normalized size = 0.

$$\int\frac{e^{-cx^2+bx+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(-c*x^2+b*x+a)/x^2,x)

[Out] int(exp(-c*x^2+b*x+a)/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(-cx^2+bx+a\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-c*x^2 + b*x + a)/x^2,x, algorithm="maxima")

[Out] integrate(e^(-c*x^2 + b*x + a)/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(-cx^2+bx+a\right)}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-c*x^2 + b*x + a)/x^2,x, algorithm="fricas")

[Out] integral(e^(-c*x^2 + b*x + a)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$e^{a}\int \frac{e^{bx}e^{-cx^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(-c*x**2+b*x+a)/x**2,x)

[Out] exp(a)*Integral(exp(b*x)*exp(-c*x**2)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{\left(-cx^2+bx+a\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-c*x^2 + b*x + a)/x^2,x, algorithm="giac")

[Out] integrate(e^(-c*x^2 + b*x + a)/x^2, x)
```

3.438 $\int e^{(a+bx)(c+dx)}x^3\,dx$

Optimal. Leaf size=297

$$-\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}(ad+bc)^3\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{16b^{7/2}d^{7/2}}+\frac{3\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}(ad+bc)\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{8b^{5/2}d^{5/2}}+\frac{(ad+bc)^2e^{x(ad+bc)+ac+bdx^2}}{8b^3d^3}-\frac{x(ad+bc)e^{x(ad+bc)+ac+bdx^2}}{4b^2d^2}-\frac{e^{x(ad+bc)+ac+bdx^2}}{2b^2d^2}+\frac{x^2e^{x(ad+bc)+ac+bdx^2}}{2bd}$$

```
[Out] -E^(a*c + (b*c + a*d)*x + b*d*x^2)/(2*b^2*d^2) + ((b*c + a*d)^2*E
^(a*c + (b*c + a*d)*x + b*d*x^2))/(8*b^3*d^3) - ((b*c + a*d)*E^(a
*c + (b*c + a*d)*x + b*d*x^2)*x)/(4*b^2*d^2) + (E^(a*c + (b*c + a
*d)*x + b*d*x^2)*x^2)/(2*b*d) + (3*(b*c + a*d)*Sqrt[Pi]*Erfi[(b*c
 + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(8*b^(5/2)*d^(5/2)*E^((b*
c - a*d)^2/(4*b*d))) - ((b*c + a*d)^3*Sqrt[Pi]*Erfi[(b*c + a*d +
2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(16*b^(7/2)*d^(7/2)*E^((b*c - a*d)
^2/(4*b*d)))
```

Rubi [A] time = 1.01184, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 5, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.294

$$-\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}(ad+bc)^3\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{16b^{7/2}d^{7/2}}+\frac{3\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}(ad+bc)\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{8b^{5/2}d^{5/2}}+\frac{(ad+bc)^2e^{x(ad+bc)+ac+bdx^2}}{8b^3d^3}-\frac{x(ad+bc)e^{x(ad+bc)+ac+bdx^2}}{4b^2d^2}-\frac{e^{x(ad+bc)+ac+bdx^2}}{2b^2d^2}+\frac{x^2e^{x(ad+bc)+ac+bdx^2}}{2bd}$$

Antiderivative was successfully verified.

```
[In]  Int[E^((a + b*x)*(c + d*x))*x^3,x]
```

```
[Out] -E^(a*c + (b*c + a*d)*x + b*d*x^2)/(2*b^2*d^2) + ((b*c + a*d)^2*E
^(a*c + (b*c + a*d)*x + b*d*x^2))/(8*b^3*d^3) - ((b*c + a*d)*E^(a
*c + (b*c + a*d)*x + b*d*x^2)*x)/(4*b^2*d^2) + (E^(a*c + (b*c + a
*d)*x + b*d*x^2)*x^2)/(2*b*d) + (3*(b*c + a*d)*Sqrt[Pi]*Erfi[(b*c
 + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(8*b^(5/2)*d^(5/2)*E^((b*
c - a*d)^2/(4*b*d))) - ((b*c + a*d)^3*Sqrt[Pi]*Erfi[(b*c + a*d +
2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(16*b^(7/2)*d^(7/2)*E^((b*c - a*d)
^2/(4*b*d)))
```

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

$$\frac{x^2e^{ac+bdx^2+x(ad+bc)}}{2bd}-\frac{x\,(ad+bc)\,e^{ac+bdx^2+x(ad+bc)}}{4b^2d^2}+\frac{(ad+bc)\,e^{\frac{ac}{2}}\,e^{-\frac{a^2d}{4b}}\,e^{-\frac{bc^2}{4d}}\int e^{\frac{(ad+bc+2bdx)^2}{4bd}}\,dx}{4b^2d^2}+\frac{(ad+bc)\,e^{-\frac{a^2d}{4b}+\frac{ac}{2}-\frac{bc^2}{4d}}\int e^{\frac{(ad+bc+2bdx)^2}{4bd}}\,dx}{2b^2d^2}-\frac{e^{ac+bdx^2+x(ad+bc)}}{2b^2d^2}-\frac{(ad+bc)^3\,e^{-\frac{a^2d}{4b}+\frac{ac}{2}-\frac{bc^2}{4d}}\int e^{\frac{(ad+bc+2bdx)^2}{4bd}}\,dx}{8b^3d^3}+\frac{(ad+bc)^2\,e^{ac+bdx^2+x(ad+bc)}}{8b^3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)*(d*x+c))*x**3,x)
```

```
[Out] x**2*exp(a*c + b*d*x**2 + x*(a*d + b*c))/(2*b*d) - x*(a*d + b*c)*
exp(a*c + b*d*x**2 + x*(a*d + b*c))/(4*b**2*d**2) + (a*d + b*c)*e
xp(a*c/2)*exp(-a**2*d/(4*b))*exp(-b*c**2/(4*d))*Integral(exp((a*d
 + b*c + 2*b*d*x)**2/(4*b*d)), x)/(4*b**2*d**2) + (a*d + b*c)*exp
```

```
(-a**2*d/(4*b) + a*c/2 - b*c**2/(4*d))*Integral(exp((a*d + b*c +
2*b*d*x)**2/(4*b*d)), x)/(2*b**2*d**2) - exp(a*c + b*d*x**2 + x*(
a*d + b*c))/(2*b**2*d**2) - (a*d + b*c)**3*exp(-a**2*d/(4*b) + a*
c/2 - b*c**2/(4*d))*Integral(exp((a*d + b*c + 2*b*d*x)**2/(4*b*d)
), x)/(8*b**3*d**3) + (a*d + b*c)**2*exp(a*c + b*d*x**2 + x*(a*d
+ b*c))/(8*b**3*d**3)
```

Mathematica [A] time = 0.565346, size = 191, normalized size = 0.64

$$\frac{e^{-\frac{(bc-ad)^2}{4bd}}\left(2\sqrt{b}\sqrt{d}e^{\frac{(ad+b(c+2dx))^2}{4bd}}\left(a^2d^2-2bd(-ac+adx+2)+b^2\left(c^2-2cdx+4d^2x^2\right)\right)-\sqrt{\pi}\left(a^3d^3+3b^2cd(ac-2)+3abd^2(\right.\right.}{16b^{7/2}d^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^((a + b*x)*(c + d*x))*x^3,x]
```

```
[Out] (2*Sqrt[b]*Sqrt[d]*E^((a*d + b*(c + 2*d*x))^2/(4*b*d))*(a^2*d^2 -
 2*b*d*(2 - a*c + a*d*x) + b^2*(c^2 - 2*c*d*x + 4*d^2*x^2)) - (b^
3*c^3 + 3*b^2*c*(-2 + a*c)*d + 3*a*b*(-2 + a*c)*d^2 + a^3*d^3)*Sq
rt[Pi]*Erfi[(a*d + b*(c + 2*d*x))/(2*Sqrt[b]*Sqrt[d])])/(16*b^(7/
2)*d^(7/2)*E^((b*c - a*d)^2/(4*b*d)))
```

Maple [A] time = 0.014, size = 368, normalized size = 1.2

$$\frac{e^{ac+(ad+cb)x+bdx^2}x^2}{2bd}$$
$$-\frac{ad+cb}{2bd}\left(\frac{e^{ac+(ad+cb)x+bdx^2}x}{2bd}-\frac{ad+cb}{2bd}\left(\frac{e^{ac+(ad+cb)x+bdx^2}}{2bd}+\frac{(ad+cb)\sqrt{\pi}}{4bd}e^{ac-\frac{(ad+cb)^2}{4bd}}Erf\left(-\sqrt{-bd}x+\frac{ad+cb}{2}\frac{1}{\sqrt{-bd}}\right)\frac{}{\sqrt{}}\right.\right.$$
$$-\frac{1}{bd}\left(\frac{e^{ac+(ad+cb)x+bdx^2}}{2bd}+\frac{(ad+cb)\sqrt{\pi}}{4bd}e^{ac-\frac{(ad+cb)^2}{4bd}}Erf\left(-\sqrt{-bd}x+\frac{ad+cb}{2}\frac{1}{\sqrt{-bd}}\right)\frac{1}{\sqrt{-bd}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((d*x+c)*(b*x+a))*x^3,x)
```

```
[Out] 1/2*exp(a*c+(a*d+b*c)*x+b*d*x^2)*x^2/b/d-1/2*(a*d+b*c)/b/d*(1/2*e
xp(a*c+(a*d+b*c)*x+b*d*x^2)*x/b/d-1/2*(a*d+b*c)/b/d*(1/2*exp(a*c+
(a*d+b*c)*x+b*d*x^2)/b/d+1/4*(a*d+b*c)/b/d*Pi^(1/2)*exp(a*c-1/4*(
a*d+b*c)^2/b/d)/(-b*d)^(1/2)*erf(-(-b*d)^(1/2)*x+1/2*(a*d+b*c)/(-
b*d)^(1/2)))+1/4/b/d*Pi^(1/2)*exp(a*c-1/4*(a*d+b*c)^2/b/d)/(-b*d)
^(1/2)*erf(-(-b*d)^(1/2)*x+1/2*(a*d+b*c)/(-b*d)^(1/2)))-1/b/d*(1/
2*exp(a*c+(a*d+b*c)*x+b*d*x^2)/b/d+1/4*(a*d+b*c)/b/d*Pi^(1/2)*exp
(a*c-1/4*(a*d+b*c)^2/b/d)/(-b*d)^(1/2)*erf(-(-b*d)^(1/2)*x+1/2*(a
*d+b*c)/(-b*d)^(1/2)))
```

Maxima [A] time = 0.858003, size = 360, normalized size = 1.21

$$-\frac{\left(\frac{\sqrt{\pi}(2bdx+bc+ad)(bc+ad)^3\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{-\frac{(2bdx+bc+ad)^2}{bd}}\right)-1\right)}{(bd)^{\frac{7}{2}}\sqrt{-\frac{(2bdx+bc+ad)^2}{bd}}}-\frac{6(bc+ad)^2bde^{\left(\frac{(2bdx+bc+ad)^2}{4bd}\right)}}{(bd)^{\frac{7}{2}}}+\frac{8b^2d^2\left(2,-\frac{(2bdx+bc+ad)^2}{4bd}\right)}{(bd)^{\frac{7}{2}}}-\frac{12(2bdx+bc+ad)^3(bc+}{(bd)^{\frac{7}{2}}\left(-\frac{(2ba}{}\right.}\right.}{16\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/16*(sqrt(pi)*(2*b*d*x + b*c + a*d)*(b*c + a*d)^3*(erf(1/2*sqrt
(-(2*b*d*x + b*c + a*d)^2/(b*d))) - 1)/((b*d)^(7/2)*sqrt(-(2*b*d*
x + b*c + a*d)^2/(b*d))) - 6*(b*c + a*d)^2*b*d*e^(1/4*(2*b*d*x +
b*c + a*d)^2/(b*d))/(b*d)^(7/2) + 8*b^2*d^2*gamma(2, -1/4*(2*b*d*
x + b*c + a*d)^2/(b*d))/(b*d)^(7/2) - 12*(2*b*d*x + b*c + a*d)^3*
(b*c + a*d)*gamma(3/2, -1/4*(2*b*d*x + b*c + a*d)^2/(b*d))/((b*d)
^(7/2)*(-(2*b*d*x + b*c + a*d)^2/(b*d))^(3/2)))*e^(a*c - 1/4*(b*c
 + a*d)^2/(b*d))/sqrt(b*d)
```

Fricas [A] time = 0.259147, size = 278, normalized size = 0.94

$$-\frac{\sqrt{\pi}\left(b^3c^3+a^3d^3+3\left(a^2bc-2\,ab\right)d^2+3\left(ab^2c^2-2\,b^2c\right)d\right)\operatorname{erf}\left(\frac{(2\,bdx+bc+ad)\sqrt{-bd}}{2\,bd}\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}-2\left(4\,b^2d^2x^2+b^2c^2 \cdots\right.}{16\sqrt{-bd}b^3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/16*(sqrt(pi)*(b^3*c^3 + a^3*d^3 + 3*(a^2*b*c - 2*a*b)*d^2 + 3*
(a*b^2*c^2 - 2*b^2*c)*d)*erf(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)
/(b*d))*e^(-1/4*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b*d)) - 2*(4*b^2
*d^2*x^2 + b^2*c^2 + a^2*d^2 + 2*(a*b*c - 2*b)*d - 2*(b^2*c*d + a
*b*d^2)*x)*sqrt(-b*d)*e^(b*d*x^2 + a*c + (b*c + a*d)*x))/(sqrt(-b
*d)*b^3*d^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)*(d*x+c))*x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.251861, size = 338, normalized size = 1.14

$$\frac{\frac{\sqrt{\pi}\left(b^3c^3+3\,ab^2c^2d+3\,a^2bcd^2+a^3d^3-6\,b^2cd-6\,abd^2\right)\operatorname{erf}\left(-\frac{1}{2}\sqrt{-bd}\left(2\,x+\frac{bc+ad}{bd}\right)\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}}{\sqrt{-bd}}+2\left(b^2d^2\left(2\,x+\frac{bc+ad}{bd}\right)^2-3\,b^2cd\left(2\,x+\cdots\right.\right.}{16\,b^3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/16*(sqrt(pi)*(b^3*c^3 + 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 + a^3*d^3
 - 6*b^2*c*d - 6*a*b*d^2)*erf(-1/2*sqrt(-b*d)*(2*x + (b*c + a*d)/
(b*d)))*e^(-1/4*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b*d))/sqrt(-b*d)
 + 2*(b^2*d^2*(2*x + (b*c + a*d)/(b*d))^2 - 3*b^2*c*d*(2*x + (b*c
 + a*d)/(b*d)) - 3*a*b*d^2*(2*x + (b*c + a*d)/(b*d)) + 3*b^2*c^2
+ 6*a*b*c*d + 3*a^2*d^2 - 4*b*d)*e^(b*d*x^2 + b*c*x + a*d*x + a*c
))/(b^3*d^3)
```

3.439 $\int e^{(a+bx)(c+dx)}x^2\,dx$

Optimal. Leaf size=216

$$\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}(ad+bc)^2\operatorname{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{8b^{5/2}d^{5/2}}-\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}\operatorname{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{4b^{3/2}d^{3/2}}-\frac{(ad+bc)e^{x(ad+bc)+ac+bdx^2}}{4b^2d^2}+\frac{xe^{x(ad+bc)+ac+bdx^2}}{2bd}$$

```
[Out] -((b*c + a*d)*E^(a*c + (b*c + a*d)*x + b*d*x^2))/(4*b^2*d^2) + (E
^(a*c + (b*c + a*d)*x + b*d*x^2)*x)/(2*b*d) - (Sqrt[Pi]*Erfi[(b*c
 + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(4*b^(3/2)*d^(3/2)*E^((b*
c - a*d)^2/(4*b*d))) + ((b*c + a*d)^2*Sqrt[Pi]*Erfi[(b*c + a*d +
2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(8*b^(5/2)*d^(5/2)*E^((b*c - a*d)^
2/(4*b*d)))
```

Rubi [A] time = 0.460772, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.294$

$$\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}(ad+bc)^2\operatorname{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{8b^{5/2}d^{5/2}}-\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}\operatorname{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{4b^{3/2}d^{3/2}}-\frac{(ad+bc)e^{x(ad+bc)+ac+bdx^2}}{4b^2d^2}+\frac{xe^{x(ad+bc)+ac+bdx^2}}{2bd}$$

Antiderivative was successfully verified.

```
[In]  Int[E^((a + b*x)*(c + d*x))*x^2,x]
```

```
[Out] -((b*c + a*d)*E^(a*c + (b*c + a*d)*x + b*d*x^2))/(4*b^2*d^2) + (E
^(a*c + (b*c + a*d)*x + b*d*x^2)*x)/(2*b*d) - (Sqrt[Pi]*Erfi[(b*c
 + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(4*b^(3/2)*d^(3/2)*E^((b*
c - a*d)^2/(4*b*d))) + ((b*c + a*d)^2*Sqrt[Pi]*Erfi[(b*c + a*d +
2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(8*b^(5/2)*d^(5/2)*E^((b*c - a*d)^
2/(4*b*d)))
```

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

$$\frac{xe^{ac+bdx^2+x(ad+bc)}}{2bd}-\frac{e^{ac-\frac{(ad+bc)^2}{4bd}}\int e^{bdx^2+x(ad+bc)+\frac{(ad+bc)^2}{4bd}}\,dx}{2bd}+\frac{(ad+bc)^2\,e^{-\frac{a^2d}{4b}+\frac{ac}{2}-\frac{bc^2}{4d}}\int e^{bdx^2+x(ad+bc)+\frac{(ad+bc)^2}{4bd}}\,dx}{4b^2d^2}-\frac{(ad+bc)\,e^{ac+bdx^2+x(ad+bc)}}{4b^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)*(d*x+c))*x**2,x)
```

```
[Out] x*exp(a*c + b*d*x**2 + x*(a*d + b*c))/(2*b*d) - exp(a*c - (a*d +
b*c)**2/(4*b*d))*Integral(exp(b*d*x**2 + x*(a*d + b*c) + (a*d + b
*c)**2/(4*b*d)), x)/(2*b*d) + (a*d + b*c)**2*exp(-a**2*d/(4*b) +
a*c/2 - b*c**2/(4*d))*Integral(exp(b*d*x**2 + x*(a*d + b*c) + (a*
d + b*c)**2/(4*b*d)), x)/(4*b**2*d**2) - (a*d + b*c)*exp(a*c + b*
d*x**2 + x*(a*d + b*c))/(4*b**2*d**2)
```

Mathematica [A] time = 0.278103, size = 144, normalized size = 0.67

$$\frac{e^{-\frac{(bc-ad)^2}{4bd}}\left(\sqrt{\pi}\left(a^2d^2+2bd(ac-1)+b^2c^2\right)\text{Erfi}\left(\frac{ad+b(c+2dx)}{2\sqrt{b}\sqrt{d}}\right)-2\sqrt{b}\sqrt{d}e^{\frac{(ad+b(c+2dx))^2}{4bd}}(ad+b(c-2dx))\right)}{8b^{5/2}d^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^((a + b*x)*(c + d*x))*x^2,x]
```

```
[Out] (-2*Sqrt[b]*Sqrt[d]*E^((a*d + b*(c + 2*d*x))^2/(4*b*d))*(a*d + b*
(c - 2*d*x)) + (b^2*c^2 + 2*b*(-1 + a*c)*d + a^2*d^2)*Sqrt[Pi]*Er
fi[(a*d + b*(c + 2*d*x))/(2*Sqrt[b]*Sqrt[d])])/(8*b^(5/2)*d^(5/2)
*E^((b*c - a*d)^2/(4*b*d)))
```

Maple [A] time = 0.008, size = 212, normalized size = 1.

$$\frac{e^{ac+(ad+cb)x+bdx^2}x}{2\,bd}-\frac{ad+cb}{2\,bd}\left(\frac{e^{ac+(ad+cb)x+bdx^2}}{2\,bd}+\frac{(ad+cb)\sqrt{\pi}}{4\,bd}e^{ac-\frac{(ad+cb)^2}{4\,bd}}Erf\left(-\sqrt{-bd}x+\frac{ad+cb}{2}\frac{1}{\sqrt{-bd}}\right)\frac{1}{\sqrt{-bd}}\right)+\frac{\sqrt{\pi}}{4\,bd}e^{ac-\frac{(ad+cb)^2}{4\,bd}}Erf\left(-\sqrt{-bd}x+\frac{ad+cb}{2}\frac{1}{\sqrt{-bd}}\right)\frac{1}{\sqrt{-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((d*x+c)*(b*x+a))*x^2,x)
```

```
[Out] 1/2*exp(a*c+(a*d+b*c)*x+b*d*x^2)*x/b/d-1/2*(a*d+b*c)/b/d*(1/2*exp
(a*c+(a*d+b*c)*x+b*d*x^2)/b/d+1/4*(a*d+b*c)/b/d*Pi^(1/2)*exp(a*c-
1/4*(a*d+b*c)^2/b/d)/(-b*d)^(1/2)*erf(-(-b*d)^(1/2)*x+1/2*(a*d+b*
c)/(-b*d)^(1/2)))+1/4/b/d*Pi^(1/2)*exp(a*c-1/4*(a*d+b*c)^2/b/d)/(
-b*d)^(1/2)*erf(-(-b*d)^(1/2)*x+1/2*(a*d+b*c)/(-b*d)^(1/2))
```

Maxima [A] time = 0.862401, size = 298, normalized size = 1.38

$$\frac{\left(\frac{\sqrt{\pi}(2\,bdx+bc+ad)(bc+ad)^2\left(\text{erf}\left(\frac{1}{2}\sqrt{-\frac{(2\,bdx+bc+ad)^2}{bd}}\right)-1\right)}{(bd)^{\frac{5}{2}}\sqrt{-\frac{(2\,bdx+bc+ad)^2}{bd}}}-\frac{4\,(bc+ad)bde^{\left(\frac{(2\,bdx+bc+ad)^2}{4\,bd}\right)}}{(bd)^{\frac{5}{2}}}-\frac{4\,(2\,bdx+bc+ad)^3\Gamma\left(\frac{3}{2},-\frac{(2\,bdx+bc+ad)^2}{4\,bd}\right)}{(bd)^{\frac{5}{2}}\left(-\frac{(2\,bdx+bc+ad)^2}{bd}\right)^{\frac{3}{2}}}\right)e^{\left(ac-\frac{(bc+ad)^2}{4\,bd}\right)}}{8\,\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(sqrt(pi)*(2*b*d*x + b*c + a*d)*(b*c + a*d)^2*(erf(1/2*sqrt(-
(2*b*d*x + b*c + a*d)^2/(b*d))) - 1)/((b*d)^(5/2)*sqrt(-(2*b*d*x
+ b*c + a*d)^2/(b*d))) - 4*(b*c + a*d)*b*d*e^(1/4*(2*b*d*x + b*c
+ a*d)^2/(b*d))/(b*d)^(5/2) - 4*(2*b*d*x + b*c + a*d)^3*gamma(3/2
, -1/4*(2*b*d*x + b*c + a*d)^2/(b*d))/((b*d)^(5/2)*(-(2*b*d*x + b
*c + a*d)^2/(b*d))^(3/2)))*e^(a*c - 1/4*(b*c + a*d)^2/(b*d))/sqrt
(b*d)
```

Fricas [A] time = 0.237022, size = 194, normalized size = 0.9

$$\frac{\sqrt{\pi}\left(b^2c^2+a^2d^2+2\,(abc-b)d\right)\text{erf}\left(\frac{(2\,bdx+bc+ad)\sqrt{-bd}}{2\,bd}\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}+2\,(2\,bdx-bc-ad)\sqrt{-bd}e^{\left(bdx^2+ac+(bc+ad)x\right)}}{8\,\sqrt{-bd}b^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(sqrt(pi)*(b^2*c^2 + a^2*d^2 + 2*(a*b*c - b)*d)*erf(1/2*(2*b*
d*x + b*c + a*d)*sqrt(-b*d)/(b*d))*e^(-1/4*(b^2*c^2 - 2*a*b*c*d +
 a^2*d^2)/(b*d)) + 2*(2*b*d*x - b*c - a*d)*sqrt(-b*d)*e^(b*d*x^2
+ a*c + (b*c + a*d)*x))/(sqrt(-b*d)*b^2*d^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)*(d*x+c))*x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.245617, size = 205, normalized size = 0.95

$$-\frac{\frac{\sqrt{\pi}\left(b^2c^2+2\,abcd+a^2d^2-2\,bd\right)\operatorname{erf}\left(-\frac{1}{2}\,\sqrt{-bd}\left(2\,x+\frac{bc+ad}{bd}\right)\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}}{\sqrt{-bd}}-2\left(bd\left(2\,x+\frac{bc+ad}{bd}\right)-2\,bc-2\,ad\right)e^{\left(bdx^2+bcx+adx+ac\right)}}{8\,b^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(sqrt(pi)*(b^2*c^2 + 2*a*b*c*d + a^2*d^2 - 2*b*d)*erf(-1/2*s
qrt(-b*d)*(2*x + (b*c + a*d)/(b*d)))*e^(-1/4*(b^2*c^2 - 2*a*b*c*d
 + a^2*d^2)/(b*d))/sqrt(-b*d) - 2*(b*d*(2*x + (b*c + a*d)/(b*d))
- 2*b*c - 2*a*d)*e^(b*d*x^2 + b*c*x + a*d*x + a*c))/(b^2*d^2)
```

3.440 $\int e^{(a+bx)(c+dx)}x\,dx$

Optimal. Leaf size=107

$$\frac{e^{x(ad+bc)+ac+bdx^2}}{2bd}-\frac{\sqrt{\pi}(ad+bc)e^{-\frac{(bc-ad)^2}{4bd}}\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{4b^{3/2}d^{3/2}}$$

```
[Out] E^(a*c + (b*c + a*d)*x + b*d*x^2)/(2*b*d) - ((b*c + a*d)*Sqrt[Pi]
*Erfi[(b*c + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(4*b^(3/2)*d^(3
/2)*E^((b*c - a*d)^2/(4*b*d)))
```

Rubi [A] time = 0.186668, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{e^{x(ad+bc)+ac+bdx^2}}{2bd}-\frac{\sqrt{\pi}(ad+bc)e^{-\frac{(bc-ad)^2}{4bd}}\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{4b^{3/2}d^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^((a + b*x)*(c + d*x))*x,x]
```

```
[Out] E^(a*c + (b*c + a*d)*x + b*d*x^2)/(2*b*d) - ((b*c + a*d)*Sqrt[Pi]
*Erfi[(b*c + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(4*b^(3/2)*d^(3
/2)*E^((b*c - a*d)^2/(4*b*d)))
```

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

$$-\frac{(ad+bc)\,e^{\frac{ac}{2}}\,e^{-\frac{a^2d}{4b}}\,e^{-\frac{bc^2}{4d}}\int e^{\frac{(ad+bc+2bdx)^2}{4bd}}\,dx}{2bd}+\frac{e^{ac+bdx^2+x(ad+bc)}}{2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)*(d*x+c))*x,x)
```

```
[Out] -(a*d + b*c)*exp(a*c/2)*exp(-a**2*d/(4*b))*exp(-b*c**2/(4*d))*Int
egral(exp((a*d + b*c + 2*b*d*x)**2/(4*b*d)), x)/(2*b*d) + exp(a*c
 + b*d*x**2 + x*(a*d + b*c))/(2*b*d)
```

Mathematica [A] time = 0.12508, size = 116, normalized size = 1.08

$$\frac{e^{-\frac{(bc-ad)^2}{4bd}}\left(2\sqrt{b}\sqrt{d}e^{\frac{(ad+b(c+2dx))^2}{4bd}}-\sqrt{\pi}(ad+bc)\text{Erfi}\left(\frac{ad+b(c+2dx)}{2\sqrt{b}\sqrt{d}}\right)\right)}{4b^{3/2}d^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^((a + b*x)*(c + d*x))*x,x]
```

```
[Out] (2*Sqrt[b]*Sqrt[d]*E^((a*d + b*(c + 2*d*x))^2/(4*b*d)) - (b*c + a
*d)*Sqrt[Pi]*Erfi[(a*d + b*(c + 2*d*x))/(2*Sqrt[b]*Sqrt[d])])/(4*
b^(3/2)*d^(3/2)*E^((b*c - a*d)^2/(4*b*d)))
```

Maple [A] time = 0.004, size = 102, normalized size = 1.

$$\frac{e^{ac+(ad+cb)x+bd x^2}}{2\,bd}+\frac{(ad+cb)\sqrt{\pi}}{4\,bd}e^{ac-\frac{(ad+cb)^2}{4\,bd}}Erf\left(-\sqrt{-bd}x+\frac{ad+cb}{2}\frac{1}{\sqrt{-bd}}\right)\frac{1}{\sqrt{-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((d*x+c)*(b*x+a))*x,x)
```

```
[Out] 1/2*exp(a*c+(a*d+b*c)*x+b*d*x^2)/b/d+1/4*(a*d+b*c)/b/d*Pi^(1/2)*e
xp(a*c-1/4*(a*d+b*c)^2/b/d)/(-b*d)^(1/2)*erf(-(-b*d)^(1/2)*x+1/2*
(a*d+b*c)/(-b*d)^(1/2))
```

Maxima [A] time = 0.827631, size = 193, normalized size = 1.8

$$-\frac{\left(\frac{\sqrt{\pi}(2\,bdx+bc+ad)(bc+ad)\left(\operatorname{erf}\left(\frac{1}{2}\sqrt{-\frac{(2\,bdx+bc+ad)^2}{bd}}\right)-1\right)}{(bd)^{\frac{3}{2}}\sqrt{-\frac{(2\,bdx+bc+ad)^2}{bd}}}-\frac{2\,bde^{\left(\frac{(2\,bdx+bc+ad)^2}{4\,bd}\right)}}{(bd)^{\frac{3}{2}}}\right)e^{\left(ac-\frac{(bc+ad)^2}{4\,bd}\right)}}{4\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(sqrt(pi)*(2*b*d*x + b*c + a*d)*(b*c + a*d)*(erf(1/2*sqrt(-(
2*b*d*x + b*c + a*d)^2/(b*d))) - 1)/((b*d)^(3/2)*sqrt(-(2*b*d*x +
 b*c + a*d)^2/(b*d))) - 2*b*d*e^(1/4*(2*b*d*x + b*c + a*d)^2/(b*d
))/(b*d)^(3/2))*e^(a*c - 1/4*(b*c + a*d)^2/(b*d))/sqrt(b*d)
```

Fricas [A] time = 0.296438, size = 150, normalized size = 1.4

$$-\frac{\sqrt{\pi}(bc+ad)\operatorname{erf}\left(\frac{(2\,bdx+bc+ad)\sqrt{-bd}}{2\,bd}\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}-2\sqrt{-bd}e^{\left(bdx^2+ac+(bc+ad)x\right)}}{4\sqrt{-bd}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(sqrt(pi)*(b*c + a*d)*erf(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*
d)/(b*d))*e^(-1/4*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b*d)) - 2*sqrt
(-b*d)*e^(b*d*x^2 + a*c + (b*c + a*d)*x))/(sqrt(-b*d)*b*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)*(d*x+c))*x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.235179, size = 140, normalized size = 1.31

$$\frac{\frac{\sqrt{\pi}(bc+ad)\operatorname{erf}\left(-\frac{1}{2}\sqrt{-bd}\left(2x+\frac{bc+ad}{bd}\right)\right)e^{\left(-\frac{b^2c^2-2abcd+a^2d^2}{4bd}\right)}}{\sqrt{-bd}}+2e^{\left(bdx^2+bcx+adx+ac\right)}}{4bd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(sqrt(pi)*(b*c + a*d)*erf(-1/2*sqrt(-b*d)*(2*x + (b*c + a*d)/
(b*d)))*e^(-1/4*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b*d))/sqrt(-b*d)
 + 2*e^(b*d*x^2 + b*c*x + a*d*x + a*c))/(b*d)
```

3.441 $\int e^{(a+bx)(c+dx)}\,dx$

Optimal. Leaf size=68

$$\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}\operatorname{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}$$

```
[Out] (Sqrt[Pi]*Erfi[(b*c + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(2*Sqr
t[b]*Sqrt[d]*E^((b*c - a*d)^2/(4*b*d)))
```

Rubi [A] time = 0.050062, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}\operatorname{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^((a + b*x)*(c + d*x)),x]
```

```
[Out] (Sqrt[Pi]*Erfi[(b*c + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/(2*Sqr
t[b]*Sqrt[d]*E^((b*c - a*d)^2/(4*b*d)))
```

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

$$e^{ac-\frac{(ad+bc)^2}{4bd}}\int e^{bdx^2+x(ad+bc)+\frac{(ad+bc)^2}{4bd}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)*(d*x+c)),x)
```

```
[Out] exp(a*c - (a*d + b*c)**2/(4*b*d))*Integral(exp(b*d*x**2 + x*(a*d
+ b*c) + (a*d + b*c)**2/(4*b*d)), x)
```

Mathematica [A] time = 0.021842, size = 68, normalized size = 1.

$$\frac{\sqrt{\pi}e^{-\frac{(bc-ad)^2}{4bd}}\operatorname{Erfi}\left(\frac{ad+b(c+2dx)}{2\sqrt{b}\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^((a + b*x)*(c + d*x)),x]
```

```
[Out] (Sqrt[Pi]*Erfi[(a*d + b*(c + 2*d*x))/(2*Sqrt[b]*Sqrt[d])])/(2*Sqr
t[b]*Sqrt[d]*E^((b*c - a*d)^2/(4*b*d)))
```

Maple [A] time = 0.004, size = 60, normalized size = 0.9

$$-\frac{\sqrt{\pi}}{2}e^{ac-\frac{(ad+cb)^2}{4bd}}Erf\left(-\sqrt{-bd}x+\frac{ad+cb}{2}\frac{1}{\sqrt{-bd}}\right)\frac{1}{\sqrt{-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((d*x+c)*(b*x+a)),x)
```

```
[Out] -1/2*Pi^(1/2)*exp(a*c-1/4*(a*d+b*c)^2/b/d)/(-b*d)^(1/2)*erf(-(-b*
d)^(1/2)*x+1/2*(a*d+b*c)/(-b*d)^(1/2))
```

Maxima [A] time = 0.757819, size = 78, normalized size = 1.15

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(\sqrt{-bd}x - \frac{bc+ad}{2\sqrt{-bd}}\right)e^{\left(ac-\frac{(bc+ad)^2}{4\,bd}\right)}}{2\sqrt{-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*erf(sqrt(-b*d)*x - 1/2*(b*c + a*d)/sqrt(-b*d))*e^(a*
c - 1/4*(b*c + a*d)^2/(b*d))/sqrt(-b*d)
```

Fricas [A] time = 0.288946, size = 92, normalized size = 1.35

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(\frac{(2\,bdx+bc+ad)\sqrt{-bd}}{2\,bd}\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}}{2\sqrt{-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*erf(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(b*d))*e^(-
1/4*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b*d))/sqrt(-b*d)
```

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

$$e^{ac}\int e^{adx}e^{bcx}e^{bdx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)*(d*x+c)),x)
```

```
[Out] exp(a*c)*Integral(exp(a*d*x)*exp(b*c*x)*exp(b*d*x**2), x)
```

GIAC/XCAS [A] time = 0.27236, size = 92, normalized size = 1.35

$$-\frac{\sqrt{\pi}\,\mathrm{erf}\left(-\frac{1}{2}\sqrt{-bd}\left(2\,x+\frac{bc+ad}{bd}\right)\right)e^{\left(-\frac{b^2c^2-2\,abcd+a^2d^2}{4\,bd}\right)}}{2\sqrt{-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*sqrt(pi)*erf(-1/2*sqrt(-b*d)*(2*x + (b*c + a*d)/(b*d)))*e^(-
1/4*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b*d))/sqrt(-b*d)
```

3.442 $\int \frac{e^{(a+bx)(c+dx)}}{x} \, dx$

Optimal. Leaf size=28

$$\text{Int}\left(\frac{e^{x(ad+bc)+ac+bdx^2}}{x}, x\right)$$

```
[Out] Unintegrable[E^(a*c + (b*c + a*d)*x + b*d*x^2)/x, x]
```

Rubi [A] time = 0.200442, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^{(a+bx)(c+dx)}}{x}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^((a + b*x)*(c + d*x))/x,x]
```

```
[Out] Defer[Int][E^(a*c + (b*c + a*d)*x + b*d*x^2)/x, x]
```

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

$$\int \frac{e^{ac+bdx^2+x(ad+bc)}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)*(d*x+c))/x,x)
```

```
[Out] Integral(exp(a*c + b*d*x**2 + x*(a*d + b*c))/x, x)
```

Mathematica [A] time = 0.682612, size = 0, normalized size = 0.

$$\int \frac{e^{(a+bx)(c+dx)}}{x} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^((a + b*x)*(c + d*x))/x,x]
```

```
[Out] Integrate[E^((a + b*x)*(c + d*x))/x, x]
```

Maple [A] time = 0.023, size = 0, normalized size = 0.

$$\int \frac{e^{(dx+c)(bx+a)}}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((d*x+c)*(b*x+a))/x,x)
```

```
[Out] int(exp((d*x+c)*(b*x+a))/x,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{((bx+a)(dx+c))}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^((b*x + a)*(d*x + c))/x, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^{\left(bdx^2+ac+(bc+ad)x\right)}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(e^(b*d*x^2 + a*c + (b*c + a*d)*x)/x, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$e^{ac}\int \frac{e^{adx}e^{bcx}e^{bdx^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp((b*x+a)*(d*x+c))/x,x)
```

```
[Out] exp(a*c)*Integral(exp(a*d*x)*exp(b*c*x)*exp(b*d*x**2)/x, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{((bx+a)(dx+c))}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^((b*x + a)*(d*x + c))/x, x)
```

3.443 $\int \frac{e^{(a+bx)(c+dx)}}{x^2} dx$

Optimal. Leaf size=128

$$(ad+bc)\text{Int}\left(\frac{e^{x(ad+bc)+ac+bdx^2}}{x},x\right)+\sqrt{\pi}\sqrt{b}\sqrt{d}e^{-\frac{(bc-ad)^2}{4bd}}\text{Erfi}\left(\frac{ad+bc+2bdx}{2\sqrt{b}\sqrt{d}}\right)-\frac{e^{x(ad+bc)+ac+bdx^2}}{x}$$

```
[Out] -(E^(a*c + (b*c + a*d)*x + b*d*x^2)/x) + (Sqrt[b]*Sqrt[d]*Sqrt[Pi
]*Erfi[(b*c + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/E^((b*c - a*d)
^2/(4*b*d)) + (b*c + a*d)*Unintegrable[E^(a*c + (b*c + a*d)*x + b
*d*x^2)/x, x]
```

Rubi [A] time = 0.422996, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{e^{(a+bx)(c+dx)}}{x^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[E^((a + b*x)*(c + d*x))/x^2,x]
```

```
[Out] -(E^(a*c + (b*c + a*d)*x + b*d*x^2)/x) + (Sqrt[b]*Sqrt[d]*Sqrt[Pi
]*Erfi[(b*c + a*d + 2*b*d*x)/(2*Sqrt[b]*Sqrt[d])])/E^((b*c - a*d)
^2/(4*b*d)) + (b*c + a*d)*Defer[Int][E^(a*c + (b*c + a*d)*x + b*d
*x^2)/x, x]
```

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

$$2bde^{ac-\frac{(ad+bc)^2}{4bd}}\int e^{\frac{(ad+bc+2bdx)^2}{4bd}}\,dx+(ad+bc)\int\frac{e^{ac+bdx^2+x(ad+bc)}}{x}\,dx-\frac{e^{ac+bdx^2+x(ad+bc)}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp((b*x+a)*(d*x+c))/x**2,x)
```

```
[Out] 2*b*d*exp(a*c - (a*d + b*c)**2/(4*b*d))*Integral(exp((a*d + b*c +
 2*b*d*x)**2/(4*b*d)), x) + (a*d + b*c)*Integral(exp(a*c + b*d*x*
*2 + x*(a*d + b*c))/x, x) - exp(a*c + b*d*x**2 + x*(a*d + b*c))/x
```

Mathematica [A] time = 0.753913, size = 0, normalized size = 0.

$$\int\frac{e^{(a+bx)(c+dx)}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[E^((a + b*x)*(c + d*x))/x^2,x]
```

```
[Out] Integrate[E^((a + b*x)*(c + d*x))/x^2, x]
```

Maple [A] time = 0.026, size = 0, normalized size = 0.

$$\int \frac{\mathrm{e}^{(dx+c)(bx+a)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((d*x+c)*(b*x+a))/x^2,x)

[Out] int(exp((d*x+c)*(b*x+a))/x^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{((bx+a)(dx+c))}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^((b*x + a)*(d*x + c))/x^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{e^{\left(bdx^2+ac+(bc+ad)x\right)}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integral(e^(b*d*x^2 + a*c + (b*c + a*d)*x)/x^2, x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$e^{ac}\int \frac{e^{adx}e^{bcx}e^{bdx^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)*(d*x+c))/x**2,x)

[Out] exp(a*c)*Integral(exp(a*d*x)*exp(b*c*x)*exp(b*d*x**2)/x**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{((bx+a)(dx+c))}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^((b*x + a)*(d*x + c))/x^2, x)
```

3.444 $\int f^{a+bx+cx^2}(d+ex)^3\,dx$

Optimal. Leaf size=266

$$-\frac{3\sqrt{\pi}e^2f^{a-\frac{b^2}{4c}}(2cd-be)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\log^{\frac{3}{2}}(f)}+\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}(2cd-be)^3\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{16c^{7/2}\sqrt{\log(f)}}+\frac{e(2cd-be)^2f^{a+bx+cx^2}}{8c^3\log(f)}+\frac{e(d+ex)(2cd-be)f^{a+bx+cx^2}}{4c^2\log(f)}-\frac{e^3f^{a+bx+cx^2}}{2c^2\log^2(f)}+\frac{e(d+ex)^2f^{a+bx+cx^2}}{2c\log(f)}$$

```
[Out] -(e^3*f^(a + b*x + c*x^2))/(2*c^2*Log[f]^2) - (3*e^2*(2*c*d - b*e
)*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*S
qrt[c])])/(8*c^(5/2)*Log[f]^(3/2)) + (e*(2*c*d - b*e)^2*f^(a + b*
x + c*x^2))/(8*c^3*Log[f]) + (e*(2*c*d - b*e)*f^(a + b*x + c*x^2)
*(d + e*x))/(4*c^2*Log[f]) + (e*f^(a + b*x + c*x^2)*(d + e*x)^2)/
(2*c*Log[f]) + ((2*c*d - b*e)^3*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[(
(b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(16*c^(7/2)*Sqrt[Log[f]])
```

Rubi [A] time = 0.599455, antiderivative size = 266, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{3\sqrt{\pi}e^2f^{a-\frac{b^2}{4c}}(2cd-be)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\log^{\frac{3}{2}}(f)}+\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}(2cd-be)^3\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{16c^{7/2}\sqrt{\log(f)}}+\frac{e(2cd-be)^2f^{a+bx+cx^2}}{8c^3\log(f)}+\frac{e(d+ex)(2cd-be)f^{a+bx+cx^2}}{4c^2\log(f)}-\frac{e^3f^{a+bx+cx^2}}{2c^2\log^2(f)}+\frac{e(d+ex)^2f^{a+bx+cx^2}}{2c\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*(d + e*x)^3,x]
```

```
[Out] -(e^3*f^(a + b*x + c*x^2))/(2*c^2*Log[f]^2) - (3*e^2*(2*c*d - b*e
)*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*S
qrt[c])])/(8*c^(5/2)*Log[f]^(3/2)) + (e*(2*c*d - b*e)^2*f^(a + b*
x + c*x^2))/(8*c^3*Log[f]) + (e*(2*c*d - b*e)*f^(a + b*x + c*x^2)
*(d + e*x))/(4*c^2*Log[f]) + (e*f^(a + b*x + c*x^2)*(d + e*x)^2)/
(2*c*Log[f]) + ((2*c*d - b*e)^3*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[(
(b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(16*c^(7/2)*Sqrt[Log[f]])
```

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

$$\frac{ef^{a+bx+cx^2}(d+ex)^2}{2c\log(f)}-\frac{e^3f^{a+bx+cx^2}}{2c^2\log(f)^2}+\frac{3e^2f^{a-\frac{b^2}{4c}}(be-2cd)\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{4c^2\log(f)}-\frac{ef^{a+bx+cx^2}(d+ex)(be-2cd)}{4c^2\log(f)}+\frac{ef^{a+bx+cx^2}(be-2cd)^2}{8c^3\log(f)}-\frac{f^{a-\frac{b^2}{4c}}(be-2cd)^3\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{8c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*(e*x+d)**3,x)
```

```
[Out] e*f**(a + b*x + c*x**2)*(d + e*x)**2/(2*c*log(f)) - e**3*f**(a +
b*x + c*x**2)/(2*c**2*log(f)**2) + 3*e**2*f**(a - b**2/(4*c))*(b*
e - 2*c*d)*Integral(f**(b**2/(4*c) + b*x + c*x**2), x)/(4*c**2*lo
g(f)) - e*f**(a + b*x + c*x**2)*(d + e*x)*(b*e - 2*c*d)/(4*c**2*l
og(f)) + e*f**(a + b*x + c*x**2)*(b*e - 2*c*d)**2/(8*c**3*log(f))
 - f**(a - b**2/(4*c))*(b*e - 2*c*d)**3*Integral(f**(b**2/(4*c) +
```

```
b*x + c*x**2), x)/(8*c**3)
```

Mathematica [A] time = 0.327679, size = 169, normalized size = 0.64

$$\frac{f^{a-\frac{b^2}{4c}}\left(2\sqrt{c}ef^{\frac{(b+2cx)^2}{4c}}\left(\log(f)\left(b^2e^2-2bce(3d+ex)+4c^2\left(3d^2+3dex+e^2x^2\right)\right)-4ce^2\right)+\sqrt{\pi}\sqrt{\log(f)}(2cd-be)\left(\log(f)(be\right.\right.}{16c^{7/2}\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*(d + e*x)^3,x]
```

```
[Out] (f^(a - b^2/(4*c))*((2*c*d - b*e)*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt
[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]]*(-6*c*e^2 + (-2*c*d + b*e)^2*
Log[f]) + 2*Sqrt[c]*e*f^((b + 2*c*x)^2/(4*c))*(-4*c*e^2 + (b^2*e^
2 - 2*b*c*e*(3*d + e*x) + 4*c^2*(3*d^2 + 3*d*e*x + e^2*x^2))*Log[
f])))/(16*c^(7/2)*Log[f]^2)
```

Maple [B] time = 0.059, size = 553, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*(e*x+d)^3,x)
```

```
[Out] -1/2*d^3*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c
*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+1/2*e^3*f^(c*x^2+b*
x+a)*x^2/c/ln(f)-1/4*e^3/c^2*b*f^(c*x^2+b*x+a)*x/ln(f)+1/8*e^3/c^
3*b^2*f^(c*x^2+b*x+a)/ln(f)+1/16*e^3/c^3*b^3*Pi^(1/2)*f^(1/4*(4*a
*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*b/(
-c*ln(f))^(1/2))-3/8*e^3/c^2*b/ln(f)*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/
c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f)
)^(1/2))-1/2*e^3*f^(c*x^2+b*x+a)/c^2/ln(f)^2+3/2*d*e^2*f^(c*x^2+b
*x+a)*x/c/ln(f)-3/4*d*e^2/c^2*b*f^(c*x^2+b*x+a)/ln(f)-3/8*d*e^2/c
^2*b^2*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*l
n(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+3/4*d*e^2/c/ln(f)*Pi^
(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2
)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+3/2*d^2*e*f^(c*x^2+b*x+a)/c/ln(
f)+3/4*d^2*e*b/c*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*
erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 1.0695, size = 899, normalized size = 3.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e*x + d)^3*f^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*d^3*f^a*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c
*log(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - 3/4*(sqrt(pi)*(2*c*x*
log(f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(
c*log(f)))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b
*log(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/
(c*log(f)))*log(f)/(c*log(f))^(3/2))*d^2*e*f^a/(sqrt(c*log(f))*f^
(1/4*b^2/c)) + 3/8*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1
```

```
/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/(
(c*log(f))^(5/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) -
 4*b*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c
*log(f))^(5/2) - 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2
*c*x*log(f) + b*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*
log(f) + b*log(f))^2/(c*log(f)))^(3/2)))*d*e^2*f^a/(sqrt(c*log(f)
)*f^(1/4*b^2/c)) - 1/16*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^3*(
erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f
)^3/((c*log(f))^(7/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)
))) - 6*b^2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(
f)^3/(c*log(f))^(7/2) + 8*c^2*gamma(2, -1/4*(2*c*x*log(f) + b*log
(f))^2/(c*log(f)))*log(f)^2/(c*log(f))^(7/2) - 12*(2*c*x*log(f) +
 b*log(f))^3*b*gamma(3/2, -1/4*(2*c*x*log(f) + b*log(f))^2/(c*log
(f)))*log(f)/((c*log(f))^(7/2)*(-(2*c*x*log(f) + b*log(f))^2/(c*l
og(f)))^(3/2)))*e^3*f^a/(sqrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.26621, size = 284, normalized size = 1.07

$$-\frac{2\left(4\,ce^{3}-\left(4\,c^{2}e^{3}x^{2}+12\,c^{2}d^{2}e-6\,bcde^{2}+b^{2}e^{3}+2\left(6\,c^{2}de^{2}-bce^{3}\right)x\right)\log\left(f\right)\right)\sqrt{-c\log\left(f\right)}f^{cx^{2}+bx+a}-\frac{\sqrt{\pi}\left(\left(8\,c^{3}d^{3}-12\,bc^{2}d^{2}e\cdots\right.\right.}{\cdots}}{16\sqrt{-c\log\left(f\right)}c^{3}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e*x + d)^3*f^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] -1/16*(2*(4*c*e^3 - (4*c^2*e^3*x^2 + 12*c^2*d^2*e - 6*b*c*d*e^2 +
 b^2*e^3 + 2*(6*c^2*d*e^2 - b*c*e^3)*x)*log(f))*sqrt(-c*log(f))*f
^(c*x^2 + b*x + a) - sqrt(pi)*((8*c^3*d^3 - 12*b*c^2*d^2*e + 6*b^
2*c*d*e^2 - b^3*e^3)*log(f)^2 - 6*(2*c^2*d*e^2 - b*c*e^3)*log(f))
*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)/f^(1/4*(b^2 - 4*a*c)/c))/
(sqrt(-c*log(f))*c^3*log(f)^2)
```

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

$$\int f^{a+bx+cx^{2}}\left(d+ex\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*(e*x+d)**3,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*(d + e*x)**3, x)
```

GIAC/XCAS [A] time = 0.2548, size = 541, normalized size = 2.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e*x + d)^3*f^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*d^3*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b
^2*ln(f) - 4*a*c*ln(f))/c)/sqrt(-c*ln(f)) + 3/4*(sqrt(pi)*b*d^2*e
rf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln
(f) - 4*c)/c)/sqrt(-c*ln(f)) + 2*d^2*e^(c*x^2*ln(f) + b*x*ln(f) +
 a*ln(f) + 1)/ln(f))/c - 3/8*(sqrt(pi)*(b^2*d*ln(f) - 2*c*d)*erf(
```

```
-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln(f)
 - 8*c)/c)/(sqrt(-c*ln(f))*ln(f)) - 2*(c*d*(2*x + b/c) - 2*b*d)*e
^(c*x^2*ln(f) + b*x*ln(f) + a*ln(f) + 2)/ln(f))/c^2 + 1/16*(sqrt(
pi)*(b^3*ln(f) - 6*b*c)*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-
1/4*(b^2*ln(f) - 4*a*c*ln(f) - 12*c)/c)/(sqrt(-c*ln(f))*ln(f)) +
2*(c^2*(2*x + b/c)^2*ln(f) - 3*b*c*(2*x + b/c)*ln(f) + 3*b^2*ln(f
) - 4*c)*e^(c*x^2*ln(f) + b*x*ln(f) + a*ln(f) + 3)/ln(f)^2)/c^3
```

3.445 $\int f^{a+bx+cx^2}(d+ex)^2\,dx$

Optimal. Leaf size=189

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}(2cd-be)^2\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\sqrt{\log(f)}}-\frac{\sqrt{\pi}e^2f^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\log^{\frac{3}{2}}(f)}+\frac{e(2cd-be)f^{a+bx+cx^2}}{4c^2\log(f)}+\frac{e(d+ex)f^{a+bx+cx^2}}{2c\log(f)}$$

```
[Out] -(e^2*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/
(2*Sqrt[c])])/(4*c^(3/2)*Log[f]^(3/2)) + (e*(2*c*d - b*e)*f^(a +
b*x + c*x^2))/(4*c^2*Log[f]) + (e*f^(a + b*x + c*x^2)*(d + e*x))/
(2*c*Log[f]) + ((2*c*d - b*e)^2*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[(
(b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(8*c^(5/2)*Sqrt[Log[f]])
```

Rubi [A] time = 0.234974, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}(2cd-be)^2\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{8c^{5/2}\sqrt{\log(f)}}-\frac{\sqrt{\pi}e^2f^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\log^{\frac{3}{2}}(f)}+\frac{e(2cd-be)f^{a+bx+cx^2}}{4c^2\log(f)}+\frac{e(d+ex)f^{a+bx+cx^2}}{2c\log(f)}$$

Antiderivative was successfully verified.

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

```
[Out] -(e^2*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/
(2*Sqrt[c])])/(4*c^(3/2)*Log[f]^(3/2)) + (e*(2*c*d - b*e)*f^(a +
b*x + c*x^2))/(4*c^2*Log[f]) + (e*f^(a + b*x + c*x^2)*(d + e*x))/
(2*c*Log[f]) + ((2*c*d - b*e)^2*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[(
(b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(8*c^(5/2)*Sqrt[Log[f]])
```

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

$$-\frac{e^2f^{a-\frac{b^2}{4c}}\int f^{\frac{(b+2cx)^2}{4c}}\,dx}{2c\log(f)}+\frac{ef^{a+bx+cx^2}(d+ex)}{2c\log(f)}-\frac{ef^{a+bx+cx^2}(be-2cd)}{4c^2\log(f)}+\frac{f^af^{-\frac{b^2}{4c}}(be-2cd)^2\int f^{\frac{(b+2cx)^2}{4c}}\,dx}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*(e*x+d)**2,x)
```

```
[Out] -e**2*f**(a - b**2/(4*c))*Integral(f**((b + 2*c*x)**2/(4*c)), x)/
(2*c*log(f)) + e*f**(a + b*x + c*x**2)*(d + e*x)/(2*c*log(f)) - e
*f**(a + b*x + c*x**2)*(b*e - 2*c*d)/(4*c**2*log(f)) + f**a*f**(-
b**2/(4*c))*(b*e - 2*c*d)**2*Integral(f**((b + 2*c*x)**2/(4*c)),
x)/(4*c**2)
```

Mathematica [A] time = 0.195307, size = 123, normalized size = 0.65

$$\frac{f^{a-\frac{b^2}{4c}}\left(\sqrt{\pi}\left(\log(f)(be-2cd)^2-2ce^2\right)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)+2\sqrt{c}e\sqrt{\log(f)}f^{\frac{(b+2cx)^2}{4c}}(-be+4cd+2cex)\right)}{8c^{5/2}\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

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

```
[Out] (f^(a - b^2/(4*c))*(2*Sqrt[c]*e*f^((b + 2*c*x)^2/(4*c))*(4*c*d -
b*e + 2*c*e*x)*Sqrt[Log[f]] + Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log
[f]])/(2*Sqrt[c])]*(-2*c*e^2 + (-2*c*d + b*e)^2*Log[f])))/(8*c^(5
/2)*Log[f]^(3/2))
```

Maple [B] time = 0.044, size = 314, normalized size = 1.7

$$-\frac{\sqrt{\pi}d^2}{2}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}+\frac{e^2f^{cx^2+bx+a}x}{2c\ln(f)}-\frac{be^2f^{cx^2+bx+a}}{4c^2\ln(f)}-\frac{b^2e^2\sqrt{\pi}}{8c^2}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}+\frac{e^2\sqrt{\pi}}{4c\ln(f)}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}+\frac{edf^{cx^2+bx+a}}{c\ln(f)}+\frac{edb\sqrt{\pi}}{2c}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*d^2*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c
*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+1/2*e^2*f^(c*x^2+b*
x+a)*x/c/ln(f)-1/4*e^2/c^2*b*f^(c*x^2+b*x+a)/ln(f)-1/8*e^2/c^2*b^
2*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))
^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+1/4*e^2/c/ln(f)*Pi^(1/2)*f
^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2
*ln(f)*b/(-c*ln(f))^(1/2))+e*d*f^(c*x^2+b*x+a)/c/ln(f)+1/2*e*d*b/
c*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))
^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.928673, size = 547, normalized size = 2.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*d^2*f^a*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c
*log(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - 1/2*(sqrt(pi)*(2*c*x*
log(f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(
c*log(f)))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b
*log(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/
(c*log(f)))*log(f)/(c*log(f))^(3/2))*d*e*f^a/(sqrt(c*log(f))*f^(1
/4*b^2/c)) + 1/8*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1/2
*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/((c
*log(f))^(5/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 4
*b*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c*l
og(f))^(5/2) - 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2*c
*x*log(f) + b*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*lo
g(f) + b*log(f))^2/(c*log(f)))^(3/2)))*e^2*f^a/(sqrt(c*log(f))*f^
(1/4*b^2/c))
```

Fricas [A] time = 0.306846, size = 177, normalized size = 0.94

$$\frac{2\left(2\,ce^2x+4\,cde-be^2\right)\sqrt{-c\log\left(f\right)}f^{cx^2+bx+a}-\frac{\sqrt{\pi}\left(2\,ce^2-\left(4\,c^2d^2-4\,bcde+b^2e^2\right)\log(f)\right)\operatorname{erf}\left(\frac{(2\,cx+b)\sqrt{-c\log(f)}}{2\,c}\right)}{f^{\frac{b^2-4\,ac}{4\,c}}}}{8\sqrt{-c\log\left(f\right)}c^2\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(2*(2*c*e^2*x + 4*c*d*e - b*e^2)*sqrt(-c*log(f))*f^(c*x^2 + b
*x + a) - sqrt(pi)*(2*c*e^2 - (4*c^2*d^2 - 4*b*c*d*e + b^2*e^2)*l
og(f))*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)/f^(1/4*(b^2 - 4*a*c
)/c))/(sqrt(-c*log(f))*c^2*log(f))
```

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

$$\int f^{a+bx+cx^2}\left(d+ex\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*(e*x+d)**2,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*(d + e*x)**2, x)
```

GIAC/XCAS [A] time = 0.268567, size = 340, normalized size = 1.8

$$-\frac{\sqrt{\pi}d^2\operatorname{erf}\left(-\frac{1}{2}\sqrt{-c\ln\left(f\right)}\left(2\,x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4\,ac\ln(f)}{4\,c}\right)}}{2\sqrt{-c\ln\left(f\right)}}+\frac{\frac{\sqrt{\pi}bd\operatorname{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2\,x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4\,ac\ln(f)-4\,c}{4\,c}\right)}}{\sqrt{-c\ln(f)}}+\frac{2\,de^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)+1\right)}}{\ln(f)}}{2\,c}-\frac{\frac{\sqrt{\pi}\left(b^2\ln(f)-2\,c\right)\operatorname{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2\,x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4\,ac\ln(f)-8\,c}{4\,c}\right)}}{\sqrt{-c\ln(f)}\ln(f)}-\frac{2\left(c\left(2\,x+\frac{b}{c}\right)-2\,b\right)e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)+2\right)}}{\ln(f)}}{8\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*sqrt(pi)*d^2*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b
^2*ln(f) - 4*a*c*ln(f))/c)/sqrt(-c*ln(f)) + 1/2*(sqrt(pi)*b*d*erf
(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln(f
) - 4*c)/c)/sqrt(-c*ln(f)) + 2*d*e^(c*x^2*ln(f) + b*x*ln(f) + a*l
n(f) + 1)/ln(f))/c - 1/8*(sqrt(pi)*(b^2*ln(f) - 2*c)*erf(-1/2*sqr
t(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln(f) - 8*c)/
c)/(sqrt(-c*ln(f))*ln(f)) - 2*(c*(2*x + b/c) - 2*b)*e^(c*x^2*ln(f
) + b*x*ln(f) + a*ln(f) + 2)/ln(f))/c^2
```

3.446 $\int f^{a+bx+cx^2}(d+ex)\,dx$

Optimal. Leaf size=90

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}(2cd-be)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\sqrt{\log(f)}}+\frac{ef^{a+bx+cx^2}}{2c\log(f)}$$

```
[Out] (e*f^(a + b*x + c*x^2))/(2*c*Log[f]) + ((2*c*d - b*e)*f^(a - b^2/
(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(4*
c^(3/2)*Sqrt[Log[f]])
```

Rubi [A] time = 0.0972697, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{\sqrt{\pi}f^{a-\frac{b^2}{4c}}(2cd-be)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}\sqrt{\log(f)}}+\frac{ef^{a+bx+cx^2}}{2c\log(f)}$$

Antiderivative was successfully verified.

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

```
[Out] (e*f^(a + b*x + c*x^2))/(2*c*Log[f]) + ((2*c*d - b*e)*f^(a - b^2/
(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])/(4*
c^(3/2)*Sqrt[Log[f]])
```

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

$$\frac{ef^{a+bx+cx^2}}{2c\log(f)}-\frac{f^{a-\frac{b^2}{4c}}(be-2cd)\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*(e*x+d),x)
```

```
[Out] e*f**(a + b*x + c*x**2)/(2*c*log(f)) - f**(a - b**2/(4*c))*(b*e -
 2*c*d)*Integral(f**(b**2/(4*c) + b*x + c*x**2), x)/(2*c)
```

Mathematica [A] time = 0.0966877, size = 96, normalized size = 1.07

$$\frac{f^{a-\frac{b^2}{4c}}\left(\sqrt{\pi}\sqrt{\log(f)}(2cd-be)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)+2\sqrt{c}ef^{\frac{(b+2cx)^2}{4c}}\right)}{4c^{3/2}\log(f)}$$

Antiderivative was successfully verified.

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

```
[Out] (f^(a - b^2/(4*c))*(2*Sqrt[c]*e*f^((b + 2*c*x)^2/(4*c)) + (2*c*d
- b*e)*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt
[Log[f]]))/(4*c^(3/2)*Log[f])
```

Maple [A] time = 0.034, size = 136, normalized size = 1.5

$$-\frac{\sqrt{\pi}d}{2}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}+\frac{f^{cx^2+bx+a}e}{2c\ln(f)}+\frac{be\sqrt{\pi}}{4c}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*d*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*l
n(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))+1/2*e*f^(c*x^2+b*x+a)
/c/ln(f)+1/4*e*b/c*Pi^(1/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2
)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.854767, size = 254, normalized size = 2.82

$$\frac{\sqrt{\pi}df^a\,\mathrm{erf}\left(\sqrt{-c\log(f)}x-\frac{b\log(f)}{2\sqrt{-c\log(f)}}\right)}{2\sqrt{-c\log(f)}f^{\frac{b^2}{4c}}}-\frac{\left(\frac{\sqrt{\pi}(2cx\log(f)+b\log(f))b\left(\mathrm{erf}\left(\frac{1}{2}\sqrt{-\frac{(2cx\log(f)+b\log(f))^2}{c\log(f)}}\right)-1\right)\log(f)}{(c\log(f))^{\frac{3}{2}}\sqrt{-\frac{(2cx\log(f)+b\log(f))^2}{c\log(f)}}}-\frac{2ce^{\left(\frac{(2cx\log(f)+b\log(f))^2}{4c\log(f)}\right)}\log(f)}{(c\log(f))^{\frac{3}{2}}}\right)ef^a}{4\sqrt{c\log(f)}f^{\frac{b^2}{4c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*d*f^a*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c*l
og(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - 1/4*(sqrt(pi)*(2*c*x*lo
g(f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*
log(f)))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b*l
og(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c
*log(f)))*log(f)/(c*log(f))^(3/2))*e*f^a/(sqrt(c*log(f))*f^(1/4*b
^2/c))
```

Fricas [A] time = 0.255052, size = 122, normalized size = 1.36

$$\frac{2\sqrt{-c\log(f)}ef^{cx^2+bx+a}+\frac{\sqrt{\pi}(2cd-be)\,\mathrm{erf}\left(\frac{(2cx+b)\sqrt{-c\log(f)}}{2c}\right)\log(f)}{f^{\frac{b^2-4ac}{4c}}}}{4\sqrt{-c\log(f)}c\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(2*sqrt(-c*log(f))*e*f^(c*x^2 + b*x + a) + sqrt(pi)*(2*c*d -
b*e)*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)*log(f)/f^(1/4*(b^2 -
4*a*c)/c))/(sqrt(-c*log(f))*c*log(f))
```

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

$$\int f^{a+bx+cx^2}(d+ex)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*(e*x+d),x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*(d + e*x), x)
```

GIAC/XCAS [A] time = 0.224995, size = 184, normalized size = 2.04

$$-\frac{\sqrt{\pi}d\,\mathrm{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4ac\ln(f)}{4c}\right)}}{2\sqrt{-c\ln(f)}}+\frac{\frac{\sqrt{\pi}b\,\mathrm{erf}\left(-\frac{1}{2}\sqrt{-c\ln(f)}\left(2x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^2\ln(f)-4ac\ln(f)-4c}{4c}\right)}}{\sqrt{-c\ln(f)}}+\frac{2e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)+1\right)}}{\ln(f)}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*sqrt(pi)*d*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2
*ln(f) - 4*a*c*ln(f))/c)/sqrt(-c*ln(f)) + 1/4*(sqrt(pi)*b*erf(-1/
2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*ln(f) - 4*a*c*ln(f) -
4*c)/c)/sqrt(-c*ln(f)) + 2*e^(c*x^2*ln(f) + b*x*ln(f) + a*ln(f) +
 1)/ln(f))/c
```

3.447 $\int \frac{f^{a+bx+cx^2}}{d+ex} \, dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{f^{a+bx+cx^2}}{d+ex},x\right)$$

```
[Out] Unintegrable[f^(a + b*x + c*x^2)/(d + e*x), x]
```

Rubi [A] time = 0.0479594, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{f^{a+bx+cx^2}}{d+ex},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(a + b*x + c*x^2)/(d + e*x),x]

[Out] Defer[Int][f^(a + b*x + c*x^2)/(d + e*x), x]
```

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

$$\int \frac{f^{a+bx+cx^2}}{d+ex} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/(e*x+d),x)

[Out] Integral(f**(a + b*x + c*x**2)/(d + e*x), x)
```

Mathematica [A] time = 0.271266, size = 0, normalized size = 0.

$$\int \frac{f^{a+bx+cx^2}}{d+ex} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x + c*x^2)/(d + e*x),x]

[Out] Integrate[f^(a + b*x + c*x^2)/(d + e*x), x]
```

Maple [A] time = 0.04, size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{ex+d} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/(e*x+d),x)
```

```
[Out] int(f^(c*x^2+b*x+a)/(e*x+d),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(e*x + d), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{cx^2+bx+a}}{ex+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(f^(c*x^2 + b*x + a)/(e*x + d), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+bx+cx^2}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)/(d + e*x), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(e*x + d), x)
```

3.448 $\int \frac{f^{a+bx+cx^2}}{(d+ex)^2}\, dx$

Optimal. Leaf size=120

$$-\frac{\log(f)(2cd-be)\text{Int}\left(\frac{f^{a+bx+cx^2}}{d+ex},x\right)}{e^2}+\frac{\sqrt{\pi}\sqrt{c}\sqrt{\log(f)}f^{a-\frac{b^2}{4c}}\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{e^2}-\frac{f^{a+bx+cx^2}}{e(d+ex)}$$

```
[Out] -(f^(a + b*x + c*x^2)/(e*(d + e*x))) + (Sqrt[c]*f^(a - b^2/(4*c))
*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f
]])/e^2 - ((2*c*d - b*e)*Log[f]*Unintegrable[f^(a + b*x + c*x^2)/
(d + e*x), x])/e^2
```

Rubi [A] time = 0.186204, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{a+bx+cx^2}}{(d+ex)^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(a + b*x + c*x^2)/(d + e*x)^2,x]
```

```
[Out] -(f^(a + b*x + c*x^2)/(e*(d + e*x))) + (Sqrt[c]*f^(a - b^2/(4*c))
*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f
]])/e^2 - ((2*c*d - b*e)*Log[f]*Defer[Int][f^(a + b*x + c*x^2)/(d
 + e*x), x])/e^2
```

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

$$\frac{2cf^{a-\frac{b^2}{4c}}\log(f)\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{e^2}-\frac{f^{a+bx+cx^2}}{e(d+ex)}+\frac{(be-2cd)\log(f)\int\frac{f^{a+bx+cx^2}}{d+ex}\,dx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] 2*c*f**(a - b**2/(4*c))*log(f)*Integral(f**(b**2/(4*c) + b*x + c*
x**2), x)/e**2 - f**(a + b*x + c*x**2)/(e*(d + e*x)) + (b*e - 2*c
*d)*log(f)*Integral(f**(a + b*x + c*x**2)/(d + e*x), x)/e**2
```

Mathematica [A] time = 1.09558, size = 0, normalized size = 0.

$$\int\frac{f^{a+bx+cx^2}}{(d+ex)^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x + c*x^2)/(d + e*x)^2,x]
```

```
[Out] Integrate[f^(a + b*x + c*x^2)/(d + e*x)^2, x]
```

Maple [A] time = 0.049, size = 0, normalized size = 0.

$$\int \frac{f^{c x^2+b x+a}}{(e x+d)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] int(f^(c*x^2+b*x+a)/(e*x+d)^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c x^2+b x+a}}{(e x+d)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(e*x + d)^2, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{f^{c x^2+b x+a}}{e^2 x^2 + 2\, d e x + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(f^(c*x^2 + b*x + a)/(e^2*x^2 + 2*d*e*x + d^2), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{a+b x+c x^2}}{(d+e x)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)/(d + e*x)**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c x^2+b x+a}}{(e x+d)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(e*x + d)^2, x)
```

3.449 $\int \frac{f^{a+bx+cx^2}}{(d+ex)^3} dx$

Optimal. Leaf size=207

$$\frac{\log^2(f)(2cd-be)^2\text{Int}\left(\frac{f^{a+bx+cx^2}}{d+ex},x\right)}{2e^4}+\frac{c\log(f)\text{Int}\left(\frac{f^{a+bx+cx^2}}{d+ex},x\right)}{e^2}-\frac{\sqrt{\pi}\sqrt{c}\log^{\frac{3}{2}}(f)f^{a-\frac{b^2}{4c}}(2cd-be)\text{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{2e^4}+\frac{\log(f)(2cd-be)f^{a+bx+cx^2}}{2e^3(d+ex)}-\frac{f^{a+bx+cx^2}}{2e(d+ex)^2}$$

```
[Out] -f^(a + b*x + c*x^2)/(2*e*(d + e*x)^2) + ((2*c*d - b*e)*f^(a + b*
x + c*x^2)*Log[f])/(2*e^3*(d + e*x)) - (Sqrt[c]*(2*c*d - b*e)*f^(
a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c
])]*Log[f]^(3/2))/(2*e^4) + (c*Log[f]*Unintegrable[f^(a + b*x + c
*x^2)/(d + e*x), x])/e^2 + ((2*c*d - b*e)^2*Log[f]^2*Unintegrable
[f^(a + b*x + c*x^2)/(d + e*x), x])/(2*e^4)
```

Rubi [A] time = 0.375792, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{f^{a+bx+cx^2}}{(d+ex)^3},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f^(a + b*x + c*x^2)/(d + e*x)^3,x]
```

```
[Out] -f^(a + b*x + c*x^2)/(2*e*(d + e*x)^2) + ((2*c*d - b*e)*f^(a + b*
x + c*x^2)*Log[f])/(2*e^3*(d + e*x)) - (Sqrt[c]*(2*c*d - b*e)*f^(
a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c
])]*Log[f]^(3/2))/(2*e^4) + (c*Log[f]*Defer[Int][f^(a + b*x + c*x
^2)/(d + e*x), x])/e^2 + ((2*c*d - b*e)^2*Log[f]^2*Defer[Int][f^(
a + b*x + c*x^2)/(d + e*x), x])/(2*e^4)
```

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

$$\frac{c\log(f)\int\frac{f^{a+bx+cx^2}}{d+ex}\,dx}{e^2}+\frac{cf^{a-\frac{b^2}{4c}}(be-2cd)\log(f)^2\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{e^4}-\frac{f^{a+bx+cx^2}}{2e(d+ex)^2}-\frac{f^{a+bx+cx^2}(be-2cd)\log(f)}{2e^3(d+ex)}+\frac{(be-2cd)^2\log(f)^2\int\frac{f^{a+bx+cx^2}}{d+ex}\,dx}{2e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] c*log(f)*Integral(f**(a + b*x + c*x**2)/(d + e*x), x)/e**2 + c*f*
*(a - b**2/(4*c))*(b*e - 2*c*d)*log(f)**2*Integral(f**(b**2/(4*c)
 + b*x + c*x**2), x)/e**4 - f**(a + b*x + c*x**2)/(2*e*(d + e*x)*
*2) - f**(a + b*x + c*x**2)*(b*e - 2*c*d)*log(f)/(2*e**3*(d + e*x
)) + (b*e - 2*c*d)**2*log(f)**2*Integral(f**(a + b*x + c*x**2)/(d
 + e*x), x)/(2*e**4)
```

Mathematica [A] time = 1.00635, size = 0, normalized size = 0.

$$\int \frac{f^{a+bx+cx^2}}{(d+ex)^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x + c*x^2)/(d + e*x)^3,x]
```

```
[Out] Integrate[f^(a + b*x + c*x^2)/(d + e*x)^3, x]
```

Maple [A] time = 0.073, size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] int(f^(c*x^2+b*x+a)/(e*x+d)^3,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)/(e*x + d)^3,x, algorithm="maxima")
```

```
[Out] integrate(f^(c*x^2 + b*x + a)/(e*x + d)^3, x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{f^{cx^2+bx+a}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)/(e*x + d)^3,x, algorithm="fricas")
```

```
[Out] integral(f^(c*x^2 + b*x + a)/(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x +
 d^3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/(e*x+d)**3,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(c*x^2 + b*x + a)/(e*x + d)^3,x, algorithm="giac")

[Out] integrate(f^(c*x^2 + b*x + a)/(e*x + d)^3, x)
```

3.450 $\int f^{a+bx+cx^2}(b+2cx)^3\,dx$

Optimal. Leaf size=45

$$\frac{(b+2cx)^2 f^{a+bx+cx^2}}{\log(f)}-\frac{4cf^{a+bx+cx^2}}{\log^2(f)}$$

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

Rubi [A] time = 0.0885751, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{(b+2cx)^2 f^{a+bx+cx^2}}{\log(f)}-\frac{4cf^{a+bx+cx^2}}{\log^2(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(a + b*x + c*x^2)*(b + 2*c*x)^3,x]
```

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

Rubi in Sympy [A] time = 8.30278, size = 42, normalized size = 0.93

$$-\frac{4cf^{a+bx+cx^2}}{\log(f)^2}+\frac{f^{a+bx+cx^2}(b+2cx)^2}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*x**2+b*x+a)*(2*c*x+b)**3,x)
```

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

Mathematica [A] time = 0.040866, size = 31, normalized size = 0.69

$$\frac{f^{a+x(b+cx)}\left(\log(f)(b+2cx)^2-4c\right)}{\log^2(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(a + b*x + c*x^2)*(b + 2*c*x)^3,x]
```

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

Maple [A] time = 0.01, size = 45, normalized size = 1.

$$\frac{\left(4\ln(f)c^2x^2+4bcx\ln(f)+b^2\ln(f)-4c\right)f^{cx^2+bx+a}}{(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*(2*c*x+b)^3,x)
```

```
[Out] (4*ln(f)*c^2*x^2+4*b*c*x*ln(f)+b^2*ln(f)-4*c)*f^(c*x^2+b*x+a)/ln(
f)^2
```

Maxima [A] time = 0.913891, size = 899, normalized size = 19.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)^3*f^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*b^3*f^a*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c
*log(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - 3/2*(sqrt(pi)*(2*c*x*
log(f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(
c*log(f)))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b
*log(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/
(c*log(f)))*log(f)/(c*log(f))^(3/2))*b^2*c*f^a/(sqrt(c*log(f))*f^
(1/4*b^2/c)) + 3/2*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1
/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/(
(c*log(f))^(5/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) -
 4*b*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c
*log(f))^(5/2) - 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2
*c*x*log(f) + b*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*
log(f) + b*log(f))^2/(c*log(f)))^(3/2)))*b*c^2*f^a/(sqrt(c*log(f)
)*f^(1/4*b^2/c)) - 1/2*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^3*(e
rf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)
^3/((c*log(f))^(7/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f))
)) - 6*b^2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f
)^3/(c*log(f))^(7/2) + 8*c^2*gamma(2, -1/4*(2*c*x*log(f) + b*log(
f))^2/(c*log(f)))*log(f)^2/(c*log(f))^(7/2) - 12*(2*c*x*log(f) +
b*log(f))^3*b*gamma(3/2, -1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(
f)))*log(f)/((c*log(f))^(7/2)*(-(2*c*x*log(f) + b*log(f))^2/(c*lo
g(f)))^(3/2)))*c^3*f^a/(sqrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.243604, size = 55, normalized size = 1.22

$$\frac{\left(\left(4\,c^2x^2 + 4\,bcx + b^2\right)\log\left(f\right) - 4\,c\right)f^{cx^2+bx+a}}{\log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)^3*f^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] ((4*c^2*x^2 + 4*b*c*x + b^2)*log(f) - 4*c)*f^(c*x^2 + b*x + a)/lo
g(f)^2
```

Sympy [A] time = 0.178246, size = 85, normalized size = 1.89

$$\begin{cases} \frac{f^{a+bx+cx^2}\left(b^2\log\left(f\right)+4bcx\log\left(f\right)+4c^2x^2\log\left(f\right)-4c\right)}{\log\left(f\right)^2} & \text{for } \log\left(f\right)^2 \neq 0 \\ b^3x + 3b^2cx^2 + 4bc^2x^3 + 2c^3x^4 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*(2*c*x+b)**3,x)
```

```
[Out] Piecewise((f**(a + b*x + c*x**2)*(b**2*log(f) + 4*b*c*x*log(f) +
4*c**2*x**2*log(f) - 4*c)/log(f)**2, Ne(log(f)**2, 0)), (b**3*x +
 3*b**2*c*x**2 + 4*b*c**2*x**3 + 2*c**3*x**4, True))
```

GIAC/XCAS [A] time = 0.240753, size = 59, normalized size = 1.31

$$\frac{\left(c^2\left(2\,x+\frac{b}{c}\right)^2\ln\left(f\right)-4\,c\right)e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)\right)}}{\ln\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)^3*f^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] (c^2*(2*x + b/c)^2*ln(f) - 4*c)*e^(c*x^2*ln(f) + b*x*ln(f) + a*ln
(f))/ln(f)^2
```

3.451 $\int f^{a+bx+cx^2}(b+2cx)^2\,dx$

Optimal. Leaf size=78

$$\frac{(b+2cx)f^{a+bx+cx^2}}{\log(f)}-\frac{\sqrt{\pi}\sqrt{c}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{\log^{\frac{3}{2}}(f)}$$

```
[Out] -((Sqrt[c]*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[
f]])/(2*Sqrt[c])])/Log[f]^(3/2)) + (f^(a + b*x + c*x^2)*(b + 2*c*
x))/Log[f]
```

Rubi [A] time = 0.0994075, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{(b+2cx)f^{a+bx+cx^2}}{\log(f)}-\frac{\sqrt{\pi}\sqrt{c}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*(b + 2*c*x)^2,x]
```

```
[Out] -((Sqrt[c]*f^(a - b^2/(4*c))*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[
f]])/(2*Sqrt[c])])/Log[f]^(3/2)) + (f^(a + b*x + c*x^2)*(b + 2*c*
x))/Log[f]
```

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

$$-\frac{2cf^{a-\frac{b^2}{4c}}\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{\log(f)}+\frac{f^{a+bx+cx^2}(b+2cx)}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*(2*c*x+b)**2,x)
```

```
[Out] -2*c*f**(a - b**2/(4*c))*Integral(f**(b**2/(4*c) + b*x + c*x**2),
 x)/log(f) + f**(a + b*x + c*x**2)*(b + 2*c*x)/log(f)
```

Mathematica [A] time = 0.0676745, size = 86, normalized size = 1.1

$$\frac{f^{a-\frac{b^2}{4c}}\left(\sqrt{\log(f)}(b+2cx)f^{\frac{(b+2cx)^2}{4c}}-\sqrt{\pi}\sqrt{c}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)\right)}{\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*(b + 2*c*x)^2,x]
```

```
[Out] (f^(a - b^2/(4*c))*(-(Sqrt[c]*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log
[f]])/(2*Sqrt[c])]) + f^((b + 2*c*x)^2/(4*c))*(b + 2*c*x)*Sqrt[Lo
g[f]]))/Log[f]^(3/2)
```

Maple [A] time = 0.039, size = 97, normalized size = 1.2

$$2\frac{cf^{cx^2+bx+a}x}{\ln(f)}+\frac{bf^{cx^2+bx+a}}{\ln(f)}+\frac{c\sqrt{\pi}}{\ln(f)}f^{\frac{4ac-b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*(2*c*x+b)^2,x)
```

```
[Out] 2*c*f^(c*x^2+b*x+a)*x/ln(f)+b*f^(c*x^2+b*x+a)/ln(f)+c/ln(f)*Pi^(1
/2)*f^(1/4*(4*a*c-b^2)/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*
x+1/2*ln(f)*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.87045, size = 547, normalized size = 7.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)^2*f^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*b^2*f^a*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c
*log(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - (sqrt(pi)*(2*c*x*log(
f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*lo
g(f)))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b*log
(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*l
og(f)))*log(f)/(c*log(f))^(3/2))*b*c*f^a/(sqrt(c*log(f))*f^(1/4*b
^2/c)) + 1/2*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1/2*sqr
t(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/((c*log
(f))^(5/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 4*b*c
*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c*log(f
))^(5/2) - 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2*c*x*l
og(f) + b*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*log(f)
 + b*log(f))^2/(c*log(f)))^(3/2)))*c^2*f^a/(sqrt(c*log(f))*f^(1/4
*b^2/c))
```

Fricas [A] time = 0.267955, size = 109, normalized size = 1.4

$$\frac{(2\,cx+b)\sqrt{-c\log(f)}f^{cx^2+bx+a}-\frac{\sqrt{\pi}c\,\mathrm{erf}\left(\frac{(2\,cx+b)\sqrt{-c\log(f)}}{2\,c}\right)}{f^{\frac{b^2-4\,ac}{4\,c}}}}{\sqrt{-c\log(f)}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)^2*f^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] ((2*c*x + b)*sqrt(-c*log(f))*f^(c*x^2 + b*x + a) - sqrt(pi)*c*erf
(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)/f^(1/4*(b^2 - 4*a*c)/c))/(sqr
t(-c*log(f))*log(f))
```

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

$$\int f^{a+bx+cx^2}\,(b+2cx)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)*(2*c*x+b)**2,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)*(b + 2*c*x)**2, x)
```

GIAC/XCAS [A] time = 0.350806, size = 119, normalized size = 1.53

$$\frac{c\left(2\,x+\frac{b}{c}\right)e^{\left(cx^2\ln(f)+bx\ln(f)+a\ln(f)\right)}}{\ln\left(f\right)}+\frac{\sqrt{\pi}c\,\operatorname{erf}\left(-\frac{1}{2}\,\sqrt{-c\ln\left(f\right)}\left(2\,x+\frac{b}{c}\right)\right)\,e^{\left(-\frac{b^2\ln(f)-4\,ac\ln(f)}{4\,c}\right)}}{\sqrt{-c\ln\left(f\right)}\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)^2*f^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] c*(2*x + b/c)*e^(c*x^2*ln(f) + b*x*ln(f) + a*ln(f))/ln(f) + sqrt(
pi)*c*erf(-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*(b^2*ln(f) - 4
*a*c*ln(f))/c)/(sqrt(-c*ln(f))*ln(f))
```

3.452 $\int f^{a+bx+cx^2}(b+2cx)\,dx$

Optimal. Leaf size=17

$$\frac{f^{a+bx+cx^2}}{\log(f)}$$

```
[Out] f^(a + b*x + c*x^2)/Log[f]
```

Rubi [A] time = 0.0294103, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{f^{a+bx+cx^2}}{\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)*(b + 2*c*x),x]

[Out] f^(a + b*x + c*x^2)/Log[f]
```

Rubi in Sympy [A] time = 3.54805, size = 14, normalized size = 0.82

$$\frac{f^{a+bx+cx^2}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)*(2*c*x+b),x)

[Out] f**(a + b*x + c*x**2)/log(f)
```

Mathematica [A] time = 0.00899216, size = 17, normalized size = 1.

$$\frac{f^{a+bx+cx^2}}{\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)*(b + 2*c*x),x]

[Out] f^(a + b*x + c*x^2)/Log[f]
```

Maple [A] time = 0.003, size = 18, normalized size = 1.1

$$\frac{f^{cx^2+bx+a}}{\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)*(2*c*x+b),x)
```

```
[Out] f^(c*x^2+b*x+a)/ln(f)
```

Maxima [A] time = 0.751346, size = 23, normalized size = 1.35

$$\frac{f^{cx^2+bx+a}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*f^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] f^(c*x^2 + b*x + a)/log(f)
```

Fricas [A] time = 0.248902, size = 23, normalized size = 1.35

$$\frac{f^{cx^2+bx+a}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*f^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] f^(c*x^2 + b*x + a)/log(f)
```

Sympy [A] time = 0.120142, size = 24, normalized size = 1.41

$$\begin{cases} \frac{f^{a+bx+cx^2}}{\log(f)} & \text{for}\ \log(f) \neq 0 \\ bx + cx^2 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f**(c*x**2+b*x+a)*(2*c*x+b),x)
```

```
[Out] Piecewise((f**(a + b*x + c*x**2)/log(f), Ne(log(f), 0)), (b*x + c
*x**2, True))
```

GIAC/XCAS [A] time = 0.311548, size = 23, normalized size = 1.35

$$\frac{f^{cx^2+bx+a}}{\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*f^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] f^(c*x^2 + b*x + a)/ln(f)
```

3.453 $\int \frac{f^{a+bx+cx^2}}{b+2cx}\,dx$

Optimal. Leaf size=39

$$\frac{f^{a-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{4c}$$

```
[Out] (f^(a - b^2/(4*c))*ExpIntegralEi[((b + 2*c*x)^2*Log[f])/(4*c)])/(
4*c)
```

Rubi [A] time = 0.0604502, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$\frac{f^{a-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{4c}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)/(b + 2*c*x),x]
```

```
[Out] (f^(a - b^2/(4*c))*ExpIntegralEi[((b + 2*c*x)^2*Log[f])/(4*c)])/(
4*c)
```

Rubi in Sympy [A] time = 5.74068, size = 29, normalized size = 0.74

$$\frac{f^{a-\frac{b^2}{4c}}\,\text{Ei}\left(\frac{(b+2cx)^2\log(f)}{4c}\right)}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/(2*c*x+b),x)
```

```
[Out] f**(a - b**2/(4*c))*Ei((b + 2*c*x)**2*log(f)/(4*c))/(4*c)
```

Mathematica [A] time = 0.020148, size = 39, normalized size = 1.

$$\frac{f^{a-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{4c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)/(b + 2*c*x),x]
```

```
[Out] (f^(a - b^2/(4*c))*ExpIntegralEi[((b + 2*c*x)^2*Log[f])/(4*c)])/(
4*c)
```

Maple [A] time = 0.026, size = 40, normalized size = 1.

$$-\frac{1}{4c}f^{\frac{4ac-b^2}{4c}}Ei\left(1,-\frac{(2cx+b)^2\ln(f)}{4c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/(2*c*x+b),x)
```

```
[Out] -1/4/c*f^(1/4*(4*a*c-b^2)/c)*Ei(1,-1/4*(2*c*x+b)^2*ln(f)/c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{2\,cx+b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(2*c*x + b), x)
```

Fricas [A] time = 0.264996, size = 63, normalized size = 1.62

$$\frac{\mathrm{Ei}\left(\frac{(4\,c^2x^2+4\,bcx+b^2)\log(f)}{4\,c}\right)}{4\,cf^{\frac{b^2-4\,ac}{4\,c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*Ei(1/4*(4*c^2*x^2 + 4*b*c*x + b^2)*log(f)/c)/(c*f^(1/4*(b^2 -
 4*a*c)/c))
```

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

$$\int \frac{f^{a+bx+cx^2}}{b+2cx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/(2*c*x+b),x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)/(b + 2*c*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{2\,cx+b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(2*c*x + b), x)
```

3.454 $\int \frac{f^{a+bx+cx^2}}{(b+2cx)^2} \, dx$

Optimal. Leaf size=84

$$\frac{\sqrt{\pi}\sqrt{\log(f)}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{f^{a+bx+cx^2}}{2c(b+2cx)}$$

```
[Out] -f^(a + b*x + c*x^2)/(2*c*(b + 2*c*x)) + (f^(a - b^2/(4*c))*Sqrt[
Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]])/(4
*c^(3/2))
```

Rubi [A] time = 0.0949937, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{\sqrt{\pi}\sqrt{\log(f)}f^{a-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{f^{a+bx+cx^2}}{2c(b+2cx)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)/(b + 2*c*x)^2,x]
```

```
[Out] -f^(a + b*x + c*x^2)/(2*c*(b + 2*c*x)) + (f^(a - b^2/(4*c))*Sqrt[
Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]])/(4
*c^(3/2))
```

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

$$\frac{f^{a-\frac{b^2}{4c}}\log(f)\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{2c}-\frac{f^{a+bx+cx^2}}{2c\,(b+2cx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/(2*c*x+b)**2,x)
```

```
[Out] f**(a - b**2/(4*c))*log(f)*Integral(f**(b**2/(4*c) + b*x + c*x**2
), x)/(2*c) - f**(a + b*x + c*x**2)/(2*c*(b + 2*c*x))
```

Mathematica [A] time = 0.0646938, size = 96, normalized size = 1.14

$$\frac{f^{a-\frac{b^2}{4c}}\left(\sqrt{\pi}\sqrt{\log(f)}(b+2cx)\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)-2\sqrt{c}f^{\frac{(b+2cx)^2}{4c}}\right)}{4c^{3/2}(b+2cx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)/(b + 2*c*x)^2,x]
```

```
[Out] (f^(a - b^2/(4*c))*(-2*Sqrt[c]*f^((b + 2*c*x)^2/(4*c)) + Sqrt[Pi]
*(b + 2*c*x)*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Lo
g[f]]))/(4*c^(3/2)*(b + 2*c*x))
```

Maple [A] time = 0.075, size = 81, normalized size = 1.

$$-\frac{f^{c x^{2}+b x+a}}{2 c \left(2 c x +b \right)}+\frac{\ln \left(f \right) \sqrt{\pi}}{4 c^{2}} f^{\frac{4 a c -b^{2}}{4 c}} \mathit{Erf} \left(\frac{2 c x +b}{2} \sqrt{-\frac{\ln \left(f \right)}{c}}\right) \frac{1}{\sqrt{-\frac{\ln \left(f \right)}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/(2*c*x+b)^2,x)
```

```
[Out] -1/2*f^(c*x^2+b*x+a)/c/(2*c*x+b)+1/4/c^2*ln(f)*Pi^(1/2)*f^(1/4*(4
*a*c-b^2)/c)/(-ln(f)/c)^(1/2)*erf(1/2*(-ln(f)/c)^(1/2)*(2*c*x+b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{c x^{2}+b x+a}}{(2 c x+b)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(2*c*x + b)^2, x)
```

Fricas [A] time = 0.272434, size = 123, normalized size = 1.46

$$\frac{\frac{\sqrt{\pi}(2 c x+b) \operatorname{erf}\left(\frac{(2 c x+b) \sqrt{-c \log (f)}}{2 c}\right) \log (f)}{f^{\frac{b^{2}-4 a c}{4 c}}}-2 \sqrt{-c \log \left(f\right)} f^{c x^{2}+b x+a}}{4 \left(2 c^{2} x+b c\right) \sqrt{-c \log \left(f\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(sqrt(pi)*(2*c*x + b)*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)*
log(f)/f^(1/4*(b^2 - 4*a*c)/c) - 2*sqrt(-c*log(f))*f^(c*x^2 + b*x
 + a))/((2*c^2*x + b*c)*sqrt(-c*log(f)))
```

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

$$\int \frac{f^{a+b x+c x^{2}}}{(b+2 c x)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/(2*c*x+b)**2,x)
```

```
[Out] Integral(f**(a + b*x + c*x**2)/(b + 2*c*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{(2\,cx+b)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x + a)/(2*c*x + b)^2, x)
```

3.455 $\int \frac{f^{a+bx+cx^2}}{(b+2cx)^3}\,dx$

Optimal. Leaf size=69

$$\frac{\log(f)f^{a-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{16c^2}-\frac{f^{a+bx+cx^2}}{4c(b+2cx)^2}$$

```
[Out] -f^(a + b*x + c*x^2)/(4*c*(b + 2*c*x)^2) + (f^(a - b^2/(4*c))*Exp
IntegralEi[((b + 2*c*x)^2*Log[f])/(4*c)]*Log[f])/(16*c^2)
```

Rubi [A] time = 0.114442, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{\log(f)f^{a-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{16c^2}-\frac{f^{a+bx+cx^2}}{4c(b+2cx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x + c*x^2)/(b + 2*c*x)^3,x]
```

```
[Out] -f^(a + b*x + c*x^2)/(4*c*(b + 2*c*x)^2) + (f^(a - b^2/(4*c))*Exp
IntegralEi[((b + 2*c*x)^2*Log[f])/(4*c)]*Log[f])/(16*c^2)
```

Rubi in Sympy [A] time = 10.862, size = 58, normalized size = 0.84

$$-\frac{f^{a+bx+cx^2}}{4c\,(b+2cx)^2}+\frac{f^{a-\frac{b^2}{4c}}\log(f)\,\text{Ei}\left(\frac{(b+2cx)^2\log(f)}{4c}\right)}{16c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x+a)/(2*c*x+b)**3,x)
```

```
[Out] -f**(a + b*x + c*x**2)/(4*c*(b + 2*c*x)**2) + f**(a - b**2/(4*c))
*log(f)*Ei((b + 2*c*x)**2*log(f)/(4*c))/(16*c**2)
```

Mathematica [A] time = 0.0523265, size = 79, normalized size = 1.14

$$\frac{f^{a-\frac{b^2}{4c}}\left(\log(f)(b+2cx)^2\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)-4cf^{\frac{(b+2cx)^2}{4c}}\right)}{16c^2(b+2cx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(a + b*x + c*x^2)/(b + 2*c*x)^3,x]
```

```
[Out] (f^(a - b^2/(4*c))*(-4*c*f^((b + 2*c*x)^2/(4*c)) + (b + 2*c*x)^2*
ExpIntegralEi[((b + 2*c*x)^2*Log[f])/(4*c)]*Log[f]))/(16*c^2*(b +
 2*c*x)^2)
```

Maple [A] time = 0.039, size = 68, normalized size = 1.

$$-\frac{f^{cx^2+bx+a}}{4c(2cx+b)^2}-\frac{\ln(f)}{16c^2}f^{\frac{4ac-b^2}{4c}}Ei\left(1,-\frac{(2cx+b)^2\ln(f)}{4c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x+a)/(2*c*x+b)^3,x)
```

```
[Out] -1/4*f^(c*x^2+b*x+a)/c/(2*c*x+b)^2-1/16/c^2*ln(f)*f^(1/4*(4*a*c-b
^2)/c)*Ei(1,-1/4*(2*c*x+b)^2*ln(f)/c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{(2cx+b)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(2*c*x + b)^3, x)
```

Fricas [A] time = 0.265144, size = 143, normalized size = 2.07

$$-\frac{4cf^{cx^2+bx+a}-\frac{(4c^2x^2+4bcx+b^2)\,\mathrm{Ei}\left(\frac{(4c^2x^2+4bcx+b^2)\log(f)}{4c}\right)\log(f)}{f^{\frac{b^2-4ac}{4c}}}}{16\,(4c^4x^2+4bc^3x+b^2c^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/16*(4*c*f^(c*x^2 + b*x + a) - (4*c^2*x^2 + 4*b*c*x + b^2)*Ei(1
/4*(4*c^2*x^2 + 4*b*c*x + b^2)*log(f)/c)*log(f)/f^(1/4*(b^2 - 4*a
*c)/c))/(4*c^4*x^2 + 4*b*c^3*x + b^2*c^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x+a)/(2*c*x+b)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx+a}}{(2cx+b)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x + a)/(2*c*x + b)^3, x)
```

3.456 $\int f^{bx+cx^2}(b+2cx)^3\,dx$

Optimal. Leaf size=43

$$\frac{(b+2cx)^2 f^{bx+cx^2}}{\log(f)}-\frac{4cf^{bx+cx^2}}{\log^2(f)}$$

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

Rubi [A] time = 0.0713655, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{(b+2cx)^2 f^{bx+cx^2}}{\log(f)}-\frac{4cf^{bx+cx^2}}{\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(b*x + c*x^2)*(b + 2*c*x)^3,x]
```

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

Rubi in Sympy [A] time = 8.12869, size = 39, normalized size = 0.91

$$-\frac{4cf^{bx+cx^2}}{\log(f)^2}+\frac{f^{bx+cx^2}(b+2cx)^2}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x)*(2*c*x+b)**3,x)
```

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

Mathematica [A] time = 0.0271563, size = 29, normalized size = 0.67

$$\frac{f^{x(b+cx)}\left(\log(f)(b+2cx)^2-4c\right)}{\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(b*x + c*x^2)*(b + 2*c*x)^3,x]
```

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

Maple [A] time = 0.006, size = 44, normalized size = 1.

$$\frac{\left(4\ln(f)c^2x^2+4bcx\ln(f)+b^2\ln(f)-4c\right)f^{cx^2+bx}}{(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x)*(2*c*x+b)^3,x)
```

```
[Out] (4*ln(f)*c^2*x^2+4*b*c*x*ln(f)+b^2*ln(f)-4*c)*f^(c*x^2+b*x)/ln(f)
^2
```

Maxima [A] time = 0.885785, size = 883, normalized size = 20.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*b^3*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c*log
(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - 3/2*(sqrt(pi)*(2*c*x*log(
f) + b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*lo
g(f)))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b*log
(f))^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*l
og(f)))*log(f)/(c*log(f))^(3/2))*b^2*c/(sqrt(c*log(f))*f^(1/4*b^2
/c)) + 3/2*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1/2*sqrt(
-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/((c*log(f
))^(5/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 4*b*c*e
^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c*log(f))
^(5/2) - 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2*c*x*log
(f) + b*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*log(f) +
 b*log(f))^2/(c*log(f)))^(3/2)))*b*c^2/(sqrt(c*log(f))*f^(1/4*b^2
/c)) - 1/2*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^3*(erf(1/2*sqrt(
-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^3/((c*log(f
))^(7/2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 6*b^2*c
*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^3/(c*log(f
))^(7/2) + 8*c^2*gamma(2, -1/4*(2*c*x*log(f) + b*log(f))^2/(c*log
(f)))*log(f)^2/(c*log(f))^(7/2) - 12*(2*c*x*log(f) + b*log(f))^3*
b*gamma(3/2, -1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)/
((c*log(f))^(7/2)*(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))^(3/2)
))*c^3/(sqrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.265909, size = 54, normalized size = 1.26

$$\frac{\left(\left(4\,c^2x^2 + 4\,bcx + b^2\right)\log\left(f\right) - 4\,c\right)f^{cx^2+bx}}{\log\left(f\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Sympy [A] time = 0.178293, size = 83, normalized size = 1.93

$$\begin{cases} \frac{f^{bx+cx^2}\left(b^2\log\left(f\right)+4bcx\log\left(f\right)+4c^2x^2\log\left(f\right)-4c\right)}{\log\left(f\right)^2} & \text{for}\ \log\left(f\right)^2 \neq 0 \\ b^3x + 3b^2cx^2 + 4bc^2x^3 + 2c^3x^4 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x)*(2*c*x+b)**3,x)
```

```
[Out] Piecewise((f**(b*x + c*x**2)*(b**2*log(f) + 4*b*c*x*log(f) + 4*c*
*2*x**2*log(f) - 4*c)/log(f)**2, Ne(log(f)**2, 0)), (b**3*x + 3*b
**2*c*x**2 + 4*b*c**2*x**3 + 2*c**3*x**4, True))
```

GIAC/XCAS [A] time = 0.230359, size = 54, normalized size = 1.26

$$\frac{\left(c^{2}\left(2\,x+\frac{b}{c}\right)^{2}\ln\left(f\right)-4\,c\right)e^{\left(cx^{2}\ln(f)+bx\ln(f)\right)}}{\ln\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (c^2*(2*x + b/c)^2*ln(f) - 4*c)*e^(c*x^2*ln(f) + b*x*ln(f))/ln(f)
^2
```

3.457 $\int f^{bx+cx^2}(b+2cx)^2\,dx$

Optimal. Leaf size=75

$$\frac{(b+2cx)f^{bx+cx^2}}{\log(f)}-\frac{\sqrt{\pi}\sqrt{c}f^{-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{\log^{\frac{3}{2}}(f)}$$

```
[Out] -((Sqrt[c]*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])
/(f^(b^2/(4*c))*Log[f]^(3/2))) + (f^(b*x + c*x^2)*(b + 2*c*x))/Lo
g[f]
```

Rubi [A] time = 0.101073, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{(b+2cx)f^{bx+cx^2}}{\log(f)}-\frac{\sqrt{\pi}\sqrt{c}f^{-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In] Int[f^(b*x + c*x^2)*(b + 2*c*x)^2,x]
```

```
[Out] -((Sqrt[c]*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])
/(f^(b^2/(4*c))*Log[f]^(3/2))) + (f^(b*x + c*x^2)*(b + 2*c*x))/Lo
g[f]
```

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

$$-\frac{2cf^{-\frac{b^2}{4c}}\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{\log(f)}+\frac{f^{bx+cx^2}(b+2cx)}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(f**(c*x**2+b*x)*(2*c*x+b)**2,x)
```

```
[Out] -2*c*f**(-b**2/(4*c))*Integral(f**(b**2/(4*c) + b*x + c*x**2), x)
/log(f) + f**(b*x + c*x**2)*(b + 2*c*x)/log(f)
```

Mathematica [A] time = 0.0375241, size = 84, normalized size = 1.12

$$\frac{f^{-\frac{b^2}{4c}}\left(\sqrt{\log(f)}(b+2cx)f^{\frac{(b+2cx)^2}{4c}}-\sqrt{\pi}\sqrt{c}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)\right)}{\log^{\frac{3}{2}}(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[f^(b*x + c*x^2)*(b + 2*c*x)^2,x]
```

```
[Out] (-(Sqrt[c]*Sqrt[Pi]*Erfi[((b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])])
 + f^((b + 2*c*x)^2/(4*c))*(b + 2*c*x)*Sqrt[Log[f]])/(f^(b^2/(4*c
))*Log[f]^(3/2))
```

Maple [A] time = 0.043, size = 84, normalized size = 1.1

$$2\frac{cx f^{x(cx+b)}}{\ln(f)}+\frac{b f^{x(cx+b)}}{\ln(f)}+\frac{c\sqrt{\pi}}{\ln(f)}f^{-\frac{b^2}{4c}}Erf\left(-\sqrt{-c\ln(f)}x+\frac{b\ln(f)}{2}\frac{1}{\sqrt{-c\ln(f)}}\right)\frac{1}{\sqrt{-c\ln(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x)*(2*c*x+b)^2,x)
```

```
[Out] 2*c/ln(f)*x*f^(x*(c*x+b))+b/ln(f)*f^(x*(c*x+b))+c/ln(f)*Pi^(1/2)*
f^(-1/4*b^2/c)/(-c*ln(f))^(1/2)*erf(-(-c*ln(f))^(1/2)*x+1/2*ln(f)
*b/(-c*ln(f))^(1/2))
```

Maxima [A] time = 0.895085, size = 535, normalized size = 7.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*sqrt(pi)*b^2*erf(sqrt(-c*log(f))*x - 1/2*b*log(f)/sqrt(-c*log
(f)))/(sqrt(-c*log(f))*f^(1/4*b^2/c)) - (sqrt(pi)*(2*c*x*log(f) +
 b*log(f))*b*(erf(1/2*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)
))) - 1)*log(f)/((c*log(f))^(3/2)*sqrt(-(2*c*x*log(f) + b*log(f))
^2/(c*log(f)))) - 2*c*e^(1/4*(2*c*x*log(f) + b*log(f))^2/(c*log(f
)))*log(f)/(c*log(f))^(3/2))*b*c/(sqrt(c*log(f))*f^(1/4*b^2/c)) +
 1/2*(sqrt(pi)*(2*c*x*log(f) + b*log(f))*b^2*(erf(1/2*sqrt(-(2*c*
x*log(f) + b*log(f))^2/(c*log(f)))) - 1)*log(f)^2/((c*log(f))^(5/
2)*sqrt(-(2*c*x*log(f) + b*log(f))^2/(c*log(f)))) - 4*b*c*e^(1/4*
(2*c*x*log(f) + b*log(f))^2/(c*log(f)))*log(f)^2/(c*log(f))^(5/2)
 - 4*(2*c*x*log(f) + b*log(f))^3*gamma(3/2, -1/4*(2*c*x*log(f) +
b*log(f))^2/(c*log(f)))/((c*log(f))^(5/2)*(-(2*c*x*log(f) + b*log
(f))^2/(c*log(f)))^(3/2)))*c^2/(sqrt(c*log(f))*f^(1/4*b^2/c))
```

Fricas [A] time = 0.266306, size = 101, normalized size = 1.35

$$\frac{(2\,cx+b)\sqrt{-c\log(f)}f^{cx^2+bx}-\frac{\sqrt{\pi}c\,\mathrm{erf}\left(\frac{(2\,cx+b)\sqrt{-c\log(f)}}{2\,c}\right)}{f^{\frac{b^2}{4\,c}}}}{\sqrt{-c\log(f)}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ((2*c*x + b)*sqrt(-c*log(f))*f^(c*x^2 + b*x) - sqrt(pi)*c*erf(1/2
*(2*c*x + b)*sqrt(-c*log(f))/c)/f^(1/4*b^2/c))/(sqrt(-c*log(f))*l
og(f))
```

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

$$\int f^{bx+cx^2}\left(b+2cx\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x)*(2*c*x+b)**2,x)
```

```
[Out] Integral(f**(b*x + c*x**2)*(b + 2*c*x)**2, x)
```

GIAC/XCAS [A] time = 0.235435, size = 103, normalized size = 1.37

$$\frac{c\left(2\,x+\frac{b}{c}\right)e^{\left(cx^{2}\ln(f)+bx\ln(f)\right)}}{\ln\left(f\right)}+\frac{\sqrt{\pi}c\,\mathrm{erf}\left(-\frac{1}{2}\,\sqrt{-c\ln\left(f\right)}\left(2\,x+\frac{b}{c}\right)\right)e^{\left(-\frac{b^{2}\ln(f)}{4\,c}\right)}}{\sqrt{-c\ln\left(f\right)}\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] c*(2*x + b/c)*e^(c*x^2*ln(f) + b*x*ln(f))/ln(f) + sqrt(pi)*c*erf(
-1/2*sqrt(-c*ln(f))*(2*x + b/c))*e^(-1/4*b^2*ln(f)/c)/(sqrt(-c*ln
(f))*ln(f))
```

3.458 $\int f^{bx+cx^2}(b+2cx)\,dx$

Optimal. Leaf size=16

$$\frac{f^{bx+cx^2}}{\log(f)}$$

```
[Out] f^(b*x + c*x^2)/Log[f]
```

Rubi [A] time = 0.0248208, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$

$$\frac{f^{bx+cx^2}}{\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(b*x + c*x^2)*(b + 2*c*x),x]

[Out] f^(b*x + c*x^2)/Log[f]
```

Rubi in Sympy [A] time = 3.49033, size = 12, normalized size = 0.75

$$\frac{f^{bx+cx^2}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x)*(2*c*x+b),x)

[Out] f**(b*x + c*x**2)/log(f)
```

Mathematica [A] time = 0.0060912, size = 16, normalized size = 1.

$$\frac{f^{bx+cx^2}}{\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^(b*x + c*x^2)*(b + 2*c*x),x]

[Out] f^(b*x + c*x^2)/Log[f]
```

Maple [A] time = 0.003, size = 17, normalized size = 1.1

$$\frac{f^{cx^2+bx}}{\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(c*x^2+b*x)*(2*c*x+b),x)
```

```
[Out] f^(c*x^2+b*x)/ln(f)
```

Maxima [A] time = 0.786563, size = 22, normalized size = 1.38

$$\frac{f^{cx^2+bx}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] f^(c*x^2 + b*x)/log(f)
```

Fricas [A] time = 0.275801, size = 22, normalized size = 1.38

$$\frac{f^{cx^2+bx}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] f^(c*x^2 + b*x)/log(f)
```

Sympy [A] time = 0.11819, size = 22, normalized size = 1.38

$$\begin{cases} \frac{f^{bx+cx^2}}{\log(f)} & \text{for}\ \log(f) \neq 0 \\ bx + cx^2 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(f**(c*x**2+b*x)*(2*c*x+b),x)
```

```
[Out] Piecewise((f**(b*x + c*x**2)/log(f), Ne(log(f), 0)), (b*x + c*x**
2, True))
```

GIAC/XCAS [A] time = 0.242021, size = 22, normalized size = 1.38

$$\frac{f^{cx^2+bx}}{\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] f^(c*x^2 + b*x)/ln(f)
```

3.459 $\int \frac{f^{bx+cx^2}}{b+2cx} \, dx$

Optimal. Leaf size=37

$$\frac{f^{-\frac{b^2}{4c}} \text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{4c}$$

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

Rubi [A] time = 0.0493567, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.05

$$\frac{f^{-\frac{b^2}{4c}} \text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{4c}$$

Antiderivative was successfully verified.

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

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

Rubi in Sympy [A] time = 5.4248, size = 27, normalized size = 0.73

$$\frac{f^{-\frac{b^2}{4c}} \text{Ei}\left(\frac{(b+2cx)^2 \log(f)}{4c}\right)}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x)/(2*c*x+b),x)

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

Mathematica [A] time = 0.0136508, size = 37, normalized size = 1.

$$\frac{f^{-\frac{b^2}{4c}} \text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{4c}$$

Antiderivative was successfully verified.

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

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

Maple [A] time = 0.023, size = 33, normalized size = 0.9

$$-\frac{1}{4c} f^{-\frac{b^2}{4c}} Ei\left(1, -\frac{(2cx+b)^2 \ln(f)}{4c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] -1/4/c*f^(-1/4*b^2/c)*Ei(1,-1/4*(2*c*x+b)^2*ln(f)/c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx}}{2\,cx+b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x)/(2*c*x + b), x)
```

Fricas [A] time = 0.251923, size = 57, normalized size = 1.54

$$\frac{\mathrm{Ei}\left(\frac{\left(4\,c^2x^2+4\,bcx+b^2\right)\log(f)}{4\,c}\right)}{4\,cf^{\frac{b^2}{4\,c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{f^{bx+cx^2}}{b+2cx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x)/(2*c*x+b),x)

[Out] Integral(f**(b*x + c*x**2)/(b + 2*c*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx}}{2\,cx+b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(f^(c*x^2 + b*x)/(2*c*x + b), x)
```

3.460 $\int \frac{f^{bx+cx^2}}{(b+2cx)^2}\,dx$

Optimal. Leaf size=81

$$\frac{\sqrt{\pi}\sqrt{\log(f)}f^{-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{f^{bx+cx^2}}{2c(b+2cx)}$$

```
[Out] -f^(b*x + c*x^2)/(2*c*(b + 2*c*x)) + (Sqrt[Pi]*Erfi[((b + 2*c*x)*
Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]])/(4*c^(3/2)*f^(b^2/(4*c))
)
```

Rubi [A] time = 0.0846678, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{\sqrt{\pi}\sqrt{\log(f)}f^{-\frac{b^2}{4c}}\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)}{4c^{3/2}}-\frac{f^{bx+cx^2}}{2c(b+2cx)}$$

Antiderivative was successfully verified.

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

```
[Out] -f^(b*x + c*x^2)/(2*c*(b + 2*c*x)) + (Sqrt[Pi]*Erfi[((b + 2*c*x)*
Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]])/(4*c^(3/2)*f^(b^2/(4*c))
)
```

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

$$-\frac{f^{bx+cx^2}}{2c\,(b+2cx)}+\frac{f^{-\frac{b^2}{4c}}\log{(f)}\int f^{\frac{b^2}{4c}+bx+cx^2}\,dx}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(c*x**2+b*x)/(2*c*x+b)**2,x)
```

```
[Out] -f**(b*x + c*x**2)/(2*c*(b + 2*c*x)) + f**(-b**2/(4*c))*log(f)*In
tegral(f**(b**2/(4*c) + b*x + c*x**2), x)/(2*c)
```

Mathematica [A] time = 0.0273736, size = 94, normalized size = 1.16

$$\frac{f^{-\frac{b^2}{4c}}\left(\sqrt{\pi}\sqrt{\log(f)}(b+2cx)\operatorname{Erfi}\left(\frac{\sqrt{\log(f)}(b+2cx)}{2\sqrt{c}}\right)-2\sqrt{c}f^{\frac{(b+2cx)^2}{4c}}\right)}{4c^{3/2}(b+2cx)}$$

Antiderivative was successfully verified.

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

```
[Out] (-2*Sqrt[c]*f^((b + 2*c*x)^2/(4*c)) + Sqrt[Pi]*(b + 2*c*x)*Erfi[(
(b + 2*c*x)*Sqrt[Log[f]])/(2*Sqrt[c])]*Sqrt[Log[f]])/(4*c^(3/2)*f
^(b^2/(4*c))*(b + 2*c*x))
```

Maple [A] time = 0.043, size = 71, normalized size = 0.9

$$-\frac{f^{x(cx+b)}}{2c(2cx+b)}+\frac{\ln(f)\sqrt{\pi}}{4c^2}f^{-\frac{b^2}{4c}}Erf\left(\frac{2cx+b}{2}\sqrt{-\frac{\ln(f)}{c}}\right)\frac{1}{\sqrt{-\frac{\ln(f)}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2/c/(2*c*x+b)*f^(x*(c*x+b))+1/4/c^2*ln(f)*Pi^(1/2)*f^(-1/4*b^2
/c)/(-ln(f)/c)^(1/2)*erf(1/2*(-ln(f)/c)^(1/2)*(2*c*x+b))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx}}{(2cx+b)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x)/(2*c*x + b)^2, x)
```

Fricas [A] time = 0.284691, size = 115, normalized size = 1.42

$$\frac{\frac{\sqrt{\pi}(2cx+b)\operatorname{erf}\left(\frac{(2cx+b)\sqrt{-c\log(f)}}{2c}\right)\log(f)}{f^{\frac{b^2}{4c}}}-2\sqrt{-c\log(f)}f^{cx^2+bx}}{4(2c^2x+bc)\sqrt{-c\log(f)}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(sqrt(pi)*(2*c*x + b)*erf(1/2*(2*c*x + b)*sqrt(-c*log(f))/c)*
log(f)/f^(1/4*b^2/c) - 2*sqrt(-c*log(f))*f^(c*x^2 + b*x))/((2*c^2
*x + b*c)*sqrt(-c*log(f)))
```

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

$$\int \frac{f^{bx+cx^2}}{(b+2cx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(c*x**2+b*x)/(2*c*x+b)**2,x)
```

```
[Out] Integral(f**(b*x + c*x**2)/(b + 2*c*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx}}{(2\,cx+b)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x)/(2*c*x + b)^2, x)
```

3.461 $\int \frac{f^{bx+cx^2}}{(b+2cx)^3} dx$

Optimal. Leaf size=66

$$\frac{\log(f)f^{-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{16c^2}-\frac{f^{bx+cx^2}}{4c(b+2cx)^2}$$

```
[Out] -f^(b*x + c*x^2)/(4*c*(b + 2*c*x)^2) + (ExpIntegralEi[((b + 2*c*x
)^2*Log[f])/(4*c)]*Log[f])/(16*c^2*f^(b^2/(4*c)))
```

Rubi [A] time = 0.0971456, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{\log(f)f^{-\frac{b^2}{4c}}\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)}{16c^2}-\frac{f^{bx+cx^2}}{4c(b+2cx)^2}$$

Antiderivative was successfully verified.

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

```
[Out] -f^(b*x + c*x^2)/(4*c*(b + 2*c*x)^2) + (ExpIntegralEi[((b + 2*c*x
)^2*Log[f])/(4*c)]*Log[f])/(16*c^2*f^(b^2/(4*c)))
```

Rubi in Sympy [A] time = 10.2817, size = 54, normalized size = 0.82

$$-\frac{f^{bx+cx^2}}{4c\,(b+2cx)^2}+\frac{f^{-\frac{b^2}{4c}}\log(f)\,\text{Ei}\left(\frac{(b+2cx)^2\log(f)}{4c}\right)}{16c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -f**(b*x + c*x**2)/(4*c*(b + 2*c*x)**2) + f**(-b**2/(4*c))*log(f)
*Ei((b + 2*c*x)**2*log(f)/(4*c))/(16*c**2)
```

Mathematica [A] time = 0.0303657, size = 77, normalized size = 1.17

$$\frac{f^{-\frac{b^2}{4c}}\left(\log(f)(b+2cx)^2\text{ExpIntegralEi}\left(\frac{\log(f)(b+2cx)^2}{4c}\right)-4cf^{\frac{(b+2cx)^2}{4c}}\right)}{16c^2(b+2cx)^2}$$

Antiderivative was successfully verified.

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

```
[Out] (-4*c*f^((b + 2*c*x)^2/(4*c)) + (b + 2*c*x)^2*ExpIntegralEi[((b +
 2*c*x)^2*Log[f])/(4*c)]*Log[f])/(16*c^2*f^(b^2/(4*c))*(b + 2*c*x
)^2)
```

Maple [A] time = 0.035, size = 58, normalized size = 0.9

$$-\frac{f^{x(cx+b)}}{4\,c\,(2\,cx+b)^2}-\frac{\ln(f)}{16\,c^2}f^{-\frac{b^2}{4\,c}}Ei\left(1,-\frac{(2\,cx+b)^2\ln(f)}{4\,c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4/c/(2*c*x+b)^2*f^(x*(c*x+b))-1/16/c^2*ln(f)*f^(-1/4*b^2/c)*Ei
(1,-1/4*(2*c*x+b)^2*ln(f)/c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx}}{(2\,cx+b)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x)/(2*c*x + b)^3, x)
```

Fricas [A] time = 0.262309, size = 135, normalized size = 2.05

$$-\frac{4\,cf^{cx^2+bx}-\frac{\left(4\,c^2x^2+4\,bcx+b^2\right)\mathrm{Ei}\left(\frac{\left(4\,c^2x^2+4\,bcx+b^2\right)\log(f)}{4\,c}\right)\log(f)}{f^{\frac{b^2}{4\,c}}}}{16\left(4\,c^4x^2+4\,bc^3x+b^2c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/16*(4*c*f^(c*x^2 + b*x) - (4*c^2*x^2 + 4*b*c*x + b^2)*Ei(1/4*(
4*c^2*x^2 + 4*b*c*x + b^2)*log(f)/c)*log(f)/f^(1/4*b^2/c))/(4*c^4
*x^2 + 4*b*c^3*x + b^2*c^2)
```

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

$$\int \frac{f^{bx+cx^2}}{(b+2cx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral(f**(b*x + c*x**2)/(b + 2*c*x)**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{f^{cx^2+bx}}{(2\,cx+b)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(f^(c*x^2 + b*x)/(2*c*x + b)^3, x)
```

3.462 $\int \frac{e^{a+bx}}{x^2(c+dx^2)}\,dx$

Optimal. Leaf size=145

$$\frac{\sqrt{d}e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{e^a b\text{ExpIntegralEi}(bx)}{c}-\frac{e^{a+bx}}{cx}$$

```
[Out] -(E^(a + b*x)/(c*x)) + (b*E^a*ExpIntegralEi[b*x])/c + (Sqrt[d]*E^
(a + (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[-((b*(Sqrt[-c] - Sqrt[d]
*x))/Sqrt[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*E^(a - (b*Sqrt[-c])/Sqr
t[d])*ExpIntegralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqrt[d]])/(2*(-c)^
(3/2))
```

Rubi [A] time = 0.575842, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{\sqrt{d}e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2(-c)^{3/2}}-\frac{\sqrt{d}e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2(-c)^{3/2}}+\frac{e^a b\text{ExpIntegralEi}(bx)}{c}-\frac{e^{a+bx}}{cx}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x)/(x^2*(c + d*x^2)),x]
```

```
[Out] -(E^(a + b*x)/(c*x)) + (b*E^a*ExpIntegralEi[b*x])/c + (Sqrt[d]*E^
(a + (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[-((b*(Sqrt[-c] - Sqrt[d]
*x))/Sqrt[d])])/(2*(-c)^(3/2)) - (Sqrt[d]*E^(a - (b*Sqrt[-c])/Sqr
t[d])*ExpIntegralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqrt[d]])/(2*(-c)^
(3/2))
```

Rubi in Sympy [A] time = 54.354, size = 126, normalized size = 0.87

$$\frac{be^a\operatorname{Ei}(bx)}{c}-\frac{\sqrt{d}e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x+\sqrt{-c}\right)}{\sqrt{d}}\right)}{2(-c)^{\frac{3}{2}}}+\frac{\sqrt{d}e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x-\sqrt{-c}\right)}{\sqrt{d}}\right)}{2(-c)^{\frac{3}{2}}}-\frac{e^{a+bx}}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b*x+a)/x**2/(d*x**2+c),x)
```

```
[Out] b*exp(a)*Ei(b*x)/c - sqrt(d)*exp(a - b*sqrt(-c)/sqrt(d))*Ei(b*(sq
rt(d)*x + sqrt(-c))/sqrt(d))/(2*(-c)**(3/2)) + sqrt(d)*exp(a + b*
sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)*x - sqrt(-c))/sqrt(d))/(2*(-c)**(
3/2)) - exp(a + b*x)/(c*x)
```

Mathematica [C] time = 0.232373, size = 133, normalized size = 0.92

$$\frac{e^a\left(i\sqrt{d}xe^{\frac{ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x-\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)-i\sqrt{d}xe^{-\frac{ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x+\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)+2b\sqrt{c}x\text{ExpIntegralEi}(bx)-2\sqrt{c}e^{bx}\right)}{2c^{3/2}x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x)/(x^2*(c + d*x^2)),x]
```

```
[Out] (E^a*(-2*Sqrt[c]*E^(b*x) + 2*b*Sqrt[c]*x*ExpIntegralEi[b*x] + I*S
qrt[d]*E^((I*b*Sqrt[c])/Sqrt[d])*x*ExpIntegralEi[b*(((-I)*Sqrt[c]
)/Sqrt[d] + x)] - (I*Sqrt[d]*x*ExpIntegralEi[b*((I*Sqrt[c])/Sqrt[
d] + x)])/E^((I*b*Sqrt[c])/Sqrt[d])))/(2*c^(3/2)*x)
```

Maple [A] time = 0.037, size = 142, normalized size = 1.

$$b\left(-\frac{e^{bx+a}}{bcx}-\frac{e^{a}Ei(1,-bx)}{c}+\frac{d}{2\,cb}\left(e^{\frac{1}{d}\left(b\sqrt{-cd}+ad\right)}Ei\left(1,\frac{1}{d}\left(b\sqrt{-cd}-d\left(bx+a\right)+ad\right)\right)-e^{-\frac{1}{d}\left(b\sqrt{-cd}-ad\right)}Ei\left(1,-\frac{1}{d}\left(b\sqrt{-cd}+d\left(bx+a\right)-ad\right)\right)\right)\frac{1}{\sqrt{-cd}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b*x+a)/x^2/(d*x^2+c),x)
```

```
[Out] b*(-exp(b*x+a)/c/b/x-1/c*exp(a)*Ei(1,-b*x)+1/2*d*(exp((b*(-c*d)^(
1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)-exp(-(b*(-c*d
)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x+a)-a*d)/d))/c/b/(-c*
d)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{e^{(bx+a)}}{(dx^2+c)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(b*x + a)/((d*x^2 + c)*x^2), x)
```

Fricas [A] time = 0.265082, size = 165, normalized size = 1.14

$$-\frac{bx\text{Ei}\left(bx-\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a+\sqrt{-\frac{b^2c}{d}}\right)}-bx\text{Ei}\left(bx+\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a-\sqrt{-\frac{b^2c}{d}}\right)}-2\left(bx\text{Ei}\left(bx\right)e^{a}-e^{(bx+a)}\right)\sqrt{-\frac{b^2c}{d}}}{2\sqrt{-\frac{b^2c}{d}}cx}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(b*x*Ei(b*x - sqrt(-b^2*c/d))*e^(a + sqrt(-b^2*c/d)) - b*x*E
i(b*x + sqrt(-b^2*c/d))*e^(a - sqrt(-b^2*c/d)) - 2*(b*x*Ei(b*x)*e
```

```
^a - e^(b*x + a))*sqrt(-b^2*c/d))/(sqrt(-b^2*c/d)*c*x)
```

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

$$e^{a}\int \frac{e^{bx}}{cx^{2}+dx^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b*x+a)/x**2/(d*x**2+c),x)
```

```
[Out] exp(a)*Integral(exp(b*x)/(c*x**2 + d*x**4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(bx+a)}}{(dx^{2}+c)x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(b*x + a)/((d*x^2 + c)*x^2), x)
```

3.463 $\int \frac{e^{a+bx}}{x(c+dx^2)}\,dx$

Optimal. Leaf size=111

$$-\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2c}-\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2c}+\frac{e^a\text{ExpIntegralEi}(bx)}{c}$$

```
[Out] (E^a*ExpIntegralEi[b*x])/c - (E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpInt
egralEi[-((b*(Sqrt[-c] - Sqrt[d]*x))/Sqrt[d])])/(2*c) - (E^(a - (
b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqr
t[d]])/(2*c)
```

Rubi [A] time = 0.39909, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2c}-\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2c}+\frac{e^a\text{ExpIntegralEi}(bx)}{c}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x)/(x*(c + d*x^2)),x]
```

```
[Out] (E^a*ExpIntegralEi[b*x])/c - (E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpInt
egralEi[-((b*(Sqrt[-c] - Sqrt[d]*x))/Sqrt[d])])/(2*c) - (E^(a - (
b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqr
t[d]])/(2*c)
```

Rubi in Sympy [A] time = 43.1497, size = 94, normalized size = 0.85

$$\frac{e^a\operatorname{Ei}(bx)}{c}-\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x+\sqrt{-c}\right)}{\sqrt{d}}\right)}{2c}-\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x-\sqrt{-c}\right)}{\sqrt{d}}\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b*x+a)/x/(d*x**2+c),x)
```

```
[Out] exp(a)*Ei(b*x)/c - exp(a - b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)*x +
sqrt(-c))/sqrt(d))/(2*c) - exp(a + b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt
(d)*x - sqrt(-c))/sqrt(d))/(2*c)
```

Mathematica [C] time = 0.0944766, size = 93, normalized size = 0.84

$$\frac{e^a\left(2\text{ExpIntegralEi}(bx)-e^{-\frac{ib\sqrt{c}}{\sqrt{d}}}\left(e^{\frac{2ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x-\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)+\text{ExpIntegralEi}\left(b\left(x+\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)\right)\right)}{2c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x)/(x*(c + d*x^2)),x]
```

```
[Out] (E^a*(2*ExpIntegralEi[b*x] - (E^(((2*I)*b*Sqrt[c])/Sqrt[d])*ExpIn
tegralEi[b*(((-I)*Sqrt[c])/Sqrt[d] + x)] + ExpIntegralEi[b*((I*Sq
rt[c])/Sqrt[d] + x)])/E^((I*b*Sqrt[c])/Sqrt[d])))/(2*c)
```

Maple [A] time = 0.026, size = 112, normalized size = 1.

$$-\frac{e^{a} Ei(1,-bx)}{c}+\frac{1}{2c}\left(e^{\frac{1}{d}\left(b\sqrt{-cd}+ad\right)} Ei\left(1,\frac{1}{d}\left(b\sqrt{-cd}-d(bx+a)+ad\right)\right)+e^{-\frac{1}{d}\left(b\sqrt{-cd}-ad\right)} Ei\left(1,-\frac{1}{d}\left(b\sqrt{-cd}+d(bx+a)-ad\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b*x+a)/x/(d*x^2+c),x)
```

```
[Out] -1/c*exp(a)*Ei(1,-b*x)+1/2*(exp((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b*(
-c*d)^(1/2)-d*(b*x+a)+a*d)/d)+exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-
(b*(-c*d)^(1/2)+d*(b*x+a)-a*d)/d))/c
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(bx+a)}}{(dx^2+c)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(b*x + a)/((d*x^2 + c)*x), x)
```

Fricas [A] time = 0.268467, size = 108, normalized size = 0.97

$$-\frac{\mathrm{Ei}\left(bx-\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a+\sqrt{-\frac{b^2c}{d}}\right)}+\mathrm{Ei}\left(bx+\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a-\sqrt{-\frac{b^2c}{d}}\right)}-2\,\mathrm{Ei}(bx)\,e^{a}}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(Ei(b*x - sqrt(-b^2*c/d))*e^(a + sqrt(-b^2*c/d)) + Ei(b*x +
sqrt(-b^2*c/d))*e^(a - sqrt(-b^2*c/d)) - 2*Ei(b*x)*e^a)/c
```

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

$$e^{a}\int \frac{e^{bx}}{cx+dx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b*x+a)/x/(d*x**2+c),x)
```

```
[Out] exp(a)*Integral(exp(b*x)/(c*x + d*x**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(bx+a)}}{(dx^2 + c)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(b*x + a)/((d*x^2 + c)*x), x)
```

3.464 $\int \frac{e^{a+bx}}{c+dx^2} \, dx$

Optimal. Leaf size=118

$$\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2\sqrt{-c}\sqrt{d}}-\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2\sqrt{-c}\sqrt{d}}$$

```
[Out] (E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[-((b*(Sqrt[-c] - Sqrt
[d]*x))/Sqrt[d])])/(2*Sqrt[-c]*Sqrt[d]) - (E^(a - (b*Sqrt[-c])/Sq
rt[d])*ExpIntegralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqrt[d]])/(2*Sqrt
[-c]*Sqrt[d])
```

Rubi [A] time = 0.216439, antiderivative size = 118, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2\sqrt{-c}\sqrt{d}}-\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2\sqrt{-c}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x)/(c + d*x^2),x]
```

```
[Out] (E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[-((b*(Sqrt[-c] - Sqrt
[d]*x))/Sqrt[d])])/(2*Sqrt[-c]*Sqrt[d]) - (E^(a - (b*Sqrt[-c])/Sq
rt[d])*ExpIntegralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqrt[d]])/(2*Sqrt
[-c]*Sqrt[d])
```

Rubi in Sympy [A] time = 29.9651, size = 104, normalized size = 0.88

$$-\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x+\sqrt{-c}\right)}{\sqrt{d}}\right)}{2\sqrt{d}\sqrt{-c}}+\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x-\sqrt{-c}\right)}{\sqrt{d}}\right)}{2\sqrt{d}\sqrt{-c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b*x+a)/(d*x**2+c),x)
```

```
[Out] -exp(a - b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)*x + sqrt(-c))/sqrt(d))
/(2*sqrt(d)*sqrt(-c)) + exp(a + b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)
*x - sqrt(-c))/sqrt(d))/(2*sqrt(d)*sqrt(-c))
```

Mathematica [C] time = 0.032398, size = 94, normalized size = 0.8

$$-\frac{ie^{a-\frac{ib\sqrt{c}}{\sqrt{d}}}\left(e^{\frac{2ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x-\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)-\text{ExpIntegralEi}\left(b\left(x+\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)\right)}{2\sqrt{c}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x)/(c + d*x^2),x]
```

```
[Out] ((-I/2)*E^(a - (I*b*Sqrt[c])/Sqrt[d])*(E^(((2*I)*b*Sqrt[c])/Sqrt[
d])*ExpIntegralEi[b*(((-I)*Sqrt[c])/Sqrt[d] + x)] - ExpIntegralEi
[b*((I*Sqrt[c])/Sqrt[d] + x)]))/(Sqrt[c]*Sqrt[d])
```

Maple [A] time = 0.017, size = 102, normalized size = 0.9

$$-\frac{1}{2}\left(e^{\frac{1}{d}\left(b\sqrt{-cd}+ad\right)}Ei\left(1,\frac{1}{d}\left(b\sqrt{-cd}-d\left(bx+a\right)+ad\right)\right)-e^{-\frac{1}{d}\left(b\sqrt{-cd}-ad\right)}Ei\left(1,-\frac{1}{d}\left(b\sqrt{-cd}+d\left(bx+a\right)-ad\right)\right)\right)\frac{1}{\sqrt{-cd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b*x+a)/(d*x^2+c),x)
```

```
[Out] -1/2*(exp((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+
a*d)/d)-exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x
+a)-a*d)/d))/(-c*d)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(bx+a)}}{dx^2+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(b*x + a)/(d*x^2 + c), x)
```

Fricas [A] time = 0.345512, size = 116, normalized size = 0.98

$$\frac{b\mathrm{Ei}\left(bx-\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a+\sqrt{-\frac{b^2c}{d}}\right)}-b\mathrm{Ei}\left(bx+\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a-\sqrt{-\frac{b^2c}{d}}\right)}}{2\sqrt{-\frac{b^2c}{d}}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*Ei(b*x - sqrt(-b^2*c/d))*e^(a + sqrt(-b^2*c/d)) - b*Ei(b*x
 + sqrt(-b^2*c/d))*e^(a - sqrt(-b^2*c/d)))/(sqrt(-b^2*c/d)*d)
```

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

$$e^{a}\int \frac{e^{bx}}{c+dx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b*x+a)/(d*x**2+c),x)
```

```
[Out] exp(a)*Integral(exp(b*x)/(c + d*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(bx+a)}}{dx^2 + c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(e^(b*x + a)/(d*x^2 + c), x)
```

3.465 $\int \frac{e^{a+bx}x}{c+dx^2}\,dx$

Optimal. Leaf size=100

$$\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b(\sqrt{-c}-\sqrt{d}x)}{\sqrt{d}}\right)}{2d}+\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b(\sqrt{-c}+\sqrt{d}x)}{\sqrt{d}}\right)}{2d}$$

```
[Out] (E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[-((b*(Sqrt[-c] - Sqrt
[d]*x))/Sqrt[d])])/(2*d) + (E^(a - (b*Sqrt[-c])/Sqrt[d])*ExpInteg
ralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqrt[d]])/(2*d)
```

Rubi [A] time = 0.215846, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b(\sqrt{-c}-\sqrt{d}x)}{\sqrt{d}}\right)}{2d}+\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b(\sqrt{-c}+\sqrt{d}x)}{\sqrt{d}}\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x)*x)/(c + d*x^2),x]
```

```
[Out] (E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[-((b*(Sqrt[-c] - Sqrt
[d]*x))/Sqrt[d])])/(2*d) + (E^(a - (b*Sqrt[-c])/Sqrt[d])*ExpInteg
ralEi[(b*(Sqrt[-c] + Sqrt[d]*x))/Sqrt[d]])/(2*d)
```

Rubi in Sympy [A] time = 25.9967, size = 83, normalized size = 0.83

$$\frac{e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b(\sqrt{d}x+\sqrt{-c})}{\sqrt{d}}\right)}{2d}+\frac{e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b(\sqrt{d}x-\sqrt{-c})}{\sqrt{d}}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b*x+a)*x/(d*x**2+c),x)
```

```
[Out] exp(a - b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)*x + sqrt(-c))/sqrt(d))/
(2*d) + exp(a + b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)*x - sqrt(-c))/s
qrt(d))/(2*d)
```

Mathematica [C] time = 0.0345844, size = 83, normalized size = 0.83

$$\frac{e^{a-\frac{ib\sqrt{c}}{\sqrt{d}}}\left(e^{\frac{2ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x-\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)+\text{ExpIntegralEi}\left(b\left(x+\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x)*x)/(c + d*x^2),x]
```

```
[Out] (E^(a - (I*b*Sqrt[c])/Sqrt[d])*(E^(((2*I)*b*Sqrt[c])/Sqrt[d])*Exp
IntegralEi[b*(((-I)*Sqrt[c])/Sqrt[d] + x)] + ExpIntegralEi[b*((I*
```

```
Sqrt[c])/Sqrt[d] + x)]))/(2*d)
```

Maple [B] time = 0.016, size = 323, normalized size = 3.2

$$\frac{1}{b^2}\left(-\frac{b}{2d}\left(\sqrt{-cd}\,e^{\frac{1}{d}\left(b\sqrt{-cd}+ad\right)}Ei\left(1,\frac{1}{d}\left(b\sqrt{-cd}-d\left(bx+a\right)+ad\right)\right)b+\sqrt{-cd}\,e^{-\frac{1}{d}\left(b\sqrt{-cd}-ad\right)}Ei\left(1,-\frac{1}{d}\left(b\sqrt{-cd}+d\left(bx+a\right)\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b*x+a)*x/(d*x^2+c),x)
```

```
[Out] 1/b^2*(-1/2*b/d*((-c*d)^(1/2)*exp((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b
*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)*b+(-c*d)^(1/2)*exp(-(b*(-c*d)^(1/
2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x+a)-a*d)/d)*b+exp((b*(-c*d
)^(1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)*a*d-exp(-(
b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x+a)-a*d)/d)*a*
d)/(-c*d)^(1/2)+1/2*a*b*(exp((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b*(-c*
d)^(1/2)-d*(b*x+a)+a*d)/d)-exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*
(-c*d)^(1/2)+d*(b*x+a)-a*d)/d))/(-c*d)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{xe^{(bx+a)}}{bdx^2+bc}+\int\frac{\left(dx^2e^a-ce^a\right)e^{(bx)}}{bd^2x^4+2\,bcdx^2+bc^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x*e^(b*x + a)/(b*d*x^2 + b*c) + integrate((d*x^2*e^a - c*e^a)*e^(
b*x)/(b*d^2*x^4 + 2*b*c*d*x^2 + b*c^2), x)
```

Fricas [A] time = 0.273874, size = 97, normalized size = 0.97

$$\frac{\operatorname{Ei}\left(bx-\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a+\sqrt{-\frac{b^2c}{d}}\right)}+\operatorname{Ei}\left(bx+\sqrt{-\frac{b^2c}{d}}\right)e^{\left(a-\sqrt{-\frac{b^2c}{d}}\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(Ei(b*x - sqrt(-b^2*c/d))*e^(a + sqrt(-b^2*c/d)) + Ei(b*x + s
qrt(-b^2*c/d))*e^(a - sqrt(-b^2*c/d)))/d
```

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

$$e^a\int\frac{xe^{bx}}{c+dx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b*x+a)*x/(d*x**2+c),x)
```

```
[Out] exp(a)*Integral(x*exp(b*x)/(c + d*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^{(bx+a)}}{dx^2 + c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x*e^(b*x + a)/(d*x^2 + c), x)
```

3.466 $\int \frac{e^{a+bx}x^2}{c+dx^2}\,dx$

Optimal. Leaf size=132

$$\frac{\sqrt{-c}e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2d^{3/2}}-\frac{\sqrt{-c}e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2d^{3/2}}+\frac{e^{a+bx}}{bd}$$

```
[Out] E^(a + b*x)/(b*d) + (Sqrt[-c]*E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpInt
egralEi[-((b*(Sqrt[-c] - Sqrt[d]*x))/Sqrt[d])])/(2*d^(3/2)) - (Sq
rt[-c]*E^(a - (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[(b*(Sqrt[-c] +
Sqrt[d]*x))/Sqrt[d]])/(2*d^(3/2))
```

Rubi [A] time = 0.415004, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{\sqrt{-c}e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(-\frac{b\left(\sqrt{-c}-\sqrt{d}x\right)}{\sqrt{d}}\right)}{2d^{3/2}}-\frac{\sqrt{-c}e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(\frac{b\left(\sqrt{-c}+\sqrt{d}x\right)}{\sqrt{d}}\right)}{2d^{3/2}}+\frac{e^{a+bx}}{bd}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x)*x^2)/(c + d*x^2),x]
```

```
[Out] E^(a + b*x)/(b*d) + (Sqrt[-c]*E^(a + (b*Sqrt[-c])/Sqrt[d])*ExpInt
egralEi[-((b*(Sqrt[-c] - Sqrt[d]*x))/Sqrt[d])])/(2*d^(3/2)) - (Sq
rt[-c]*E^(a - (b*Sqrt[-c])/Sqrt[d])*ExpIntegralEi[(b*(Sqrt[-c] +
Sqrt[d]*x))/Sqrt[d]])/(2*d^(3/2))
```

Rubi in Sympy [A] time = 49.5491, size = 114, normalized size = 0.86

$$-\frac{\sqrt{-c}e^{a-\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x+\sqrt{-c}\right)}{\sqrt{d}}\right)}{2d^{\frac{3}{2}}}+\frac{\sqrt{-c}e^{a+\frac{b\sqrt{-c}}{\sqrt{d}}}\operatorname{Ei}\left(\frac{b\left(\sqrt{d}x-\sqrt{-c}\right)}{\sqrt{d}}\right)}{2d^{\frac{3}{2}}}+\frac{e^{a+bx}}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(b*x+a)*x**2/(d*x**2+c),x)
```

```
[Out] -sqrt(-c)*exp(a - b*sqrt(-c)/sqrt(d))*Ei(b*(sqrt(d)*x + sqrt(-c))
/sqrt(d))/(2*d**(3/2)) + sqrt(-c)*exp(a + b*sqrt(-c)/sqrt(d))*Ei(
b*(sqrt(d)*x - sqrt(-c))/sqrt(d))/(2*d**(3/2)) + exp(a + b*x)/(b*
d)
```

Mathematica [C] time = 0.117528, size = 120, normalized size = 0.91

$$\frac{e^a\left(ib\sqrt{c}e^{\frac{ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x-\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)-ib\sqrt{c}e^{-\frac{ib\sqrt{c}}{\sqrt{d}}}\text{ExpIntegralEi}\left(b\left(x+\frac{i\sqrt{c}}{\sqrt{d}}\right)\right)+2\sqrt{d}e^{bx}\right)}{2bd^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x)*x^2)/(c + d*x^2),x]
```

```
[Out] (E^a*(2*Sqrt[d]*E^(b*x) + I*b*Sqrt[c]*E^((I*b*Sqrt[c])/Sqrt[d])*E
xpIntegralEi[b*(((-I)*Sqrt[c])/Sqrt[d] + x)] - (I*b*Sqrt[c]*ExpIn
tegralEi[b*((I*Sqrt[c])/Sqrt[d] + x)])/E^((I*b*Sqrt[c])/Sqrt[d]))
)/(2*b*d^(3/2))
```

Maple [B] time = 0.021, size = 660, normalized size = 5.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(b*x+a)*x^2/(d*x^2+c),x)
```

```
[Out] 1/b^3*(b^2/d*exp(b*x+a)-1/2/d*b*(2*exp((b*(-c*d)^(1/2)+a*d)/d)*Ei
(1,(b*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)*(-c*d)^(1/2)*a*b+exp((b*(-c*
d)^(1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)*a^2*d-exp
((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)*b
^2*c+2*exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x+
a)-a*d)/d)*(-c*d)^(1/2)*a*b-exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b
*(-c*d)^(1/2)+d*(b*x+a)-a*d)/d)*a^2*d+exp(-(b*(-c*d)^(1/2)-a*d)/d
)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x+a)-a*d)/d)*b^2*c)/(-c*d)^(1/2)-1/2
*a^2*b*(exp((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a
)+a*d)/d)-exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b
*x+a)-a*d)/d))/(-c*d)^(1/2)+a*b/d*((-c*d)^(1/2)*exp((b*(-c*d)^(1/
2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+a*d)/d)*b+(-c*d)^(1/2)*
exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*(b*x+a)-a*d)
/d)*b+exp((b*(-c*d)^(1/2)+a*d)/d)*Ei(1,(b*(-c*d)^(1/2)-d*(b*x+a)+
a*d)/d)*a*d-exp(-(b*(-c*d)^(1/2)-a*d)/d)*Ei(1,-(b*(-c*d)^(1/2)+d*
(b*x+a)-a*d)/d)*a*d)/(-c*d)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{x^{2} e^{\left(bx+a\right)}}{bdx^{2} + bc} - 2\,c \int \frac{xe^{\left(bx+a\right)}}{bd^{2}x^{4} + 2\,bcdx^{2} + bc^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x^2*e^(b*x + a)/(b*d*x^2 + b*c) - 2*c*integrate(x*e^(b*x + a)/(b*
d^2*x^4 + 2*b*c*d*x^2 + b*c^2), x)
```

Fricas [A] time = 0.335728, size = 155, normalized size = 1.17

$$-\frac{b^{2}c{\rm Ei}\left(bx - \sqrt{-\frac{b^{2}c}{d}}\right)e^{\left(a+\sqrt{-\frac{b^{2}c}{d}}\right)} - b^{2}c{\rm Ei}\left(bx + \sqrt{-\frac{b^{2}c}{d}}\right)e^{\left(a-\sqrt{-\frac{b^{2}c}{d}}\right)} - 2\,\sqrt{-\frac{b^{2}c}{d}}de^{\left(bx+a\right)}}{2\,\sqrt{-\frac{b^{2}c}{d}}bd^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(b^2*c*Ei(b*x - sqrt(-b^2*c/d))*e^(a + sqrt(-b^2*c/d)) - b^2
*c*Ei(b*x + sqrt(-b^2*c/d))*e^(a - sqrt(-b^2*c/d)) - 2*sqrt(-b^2*
c/d)*d*e^(b*x + a))/(sqrt(-b^2*c/d)*b*d^2)
```

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

$$e^{a}\int \frac{x^{2}e^{bx}}{c+dx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(b*x+a)*x**2/(d*x**2+c),x)
```

```
[Out] exp(a)*Integral(x**2*exp(b*x)/(c + d*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{2}e^{(bx+a)}}{dx^{2}+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x^2*e^(b*x + a)/(d*x^2 + c), x)
```

3.467 $\int \frac{e^{d+ex}}{x^2(a+bx+cx^2)}\,dx$

Optimal. Leaf size=212

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a^2}-\frac{be^d\text{ExpIntegralEi}(ex)}{a^2}+\frac{e^de\text{ExpIntegralEi}(ex)}{a}-\frac{e^{d+ex}}{ax}$$

```
[Out] -(E^(d + e*x)/(a*x)) - (b*E^d*ExpIntegralEi[e*x])/a^2 + (e*E^d*Ex
pIntegralEi[e*x])/a + ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*E^(d
 - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*a^2) + ((b - (b^2 - 2*a*c)/Sqrt
[b^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpInteg
ralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*a^2)
```

Rubi [A] time = 1.03839, antiderivative size = 212, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13

$$\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a^2}+\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a^2}-\frac{be^d\text{ExpIntegralEi}(ex)}{a^2}+\frac{e^de\text{ExpIntegralEi}(ex)}{a}-\frac{e^{d+ex}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] -(E^(d + e*x)/(a*x)) - (b*E^d*ExpIntegralEi[e*x])/a^2 + (e*E^d*Ex
pIntegralEi[e*x])/a + ((b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*E^(d
 - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*a^2) + ((b - (b^2 - 2*a*c)/Sqrt
[b^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpInteg
ralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*a^2)
```

Rubi in Sympy [A] time = 74.701, size = 216, normalized size = 1.02

$$\frac{ee^d\,\text{Ei}\,(ex)}{a}-\frac{e^{d+ex}}{ax}-\frac{be^d\,\text{Ei}\,(ex)}{a^2}-\frac{\left(-2ac+b^2-b\sqrt{-4ac+b^2}\right)e^{\frac{2cd-e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\,\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx+\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2a^2\sqrt{-4ac+b^2}}+\frac{\left(-2ac+b^2+b\sqrt{-4ac+b^2}\right)e^{\frac{-be+2cd+e\sqrt{-4ac+b^2}}{2c}}\,\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx-\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2a^2\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*x+d)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] e*exp(d)*Ei(e*x)/a - exp(d + e*x)/(a*x) - b*exp(d)*Ei(e*x)/a**2 -
 (-2*a*c + b**2 - b*sqrt(-4*a*c + b**2))*exp((2*c*d - e*(b + sqrt
(-4*a*c + b**2)))/(2*c))*Ei(e*(b/2 + c*x + sqrt(-4*a*c + b**2)/2)
/c)/(2*a**2*sqrt(-4*a*c + b**2)) + (-2*a*c + b**2 + b*sqrt(-4*a*c
 + b**2))*exp((-b*e + 2*c*d + e*sqrt(-4*a*c + b**2))/(2*c))*Ei(e*
(b/2 + c*x - sqrt(-4*a*c + b**2)/2)/c)/(2*a**2*sqrt(-4*a*c + b**2
))
```

Mathematica [A] time = 1.36289, size = 232, normalized size = 1.09

$$\frac{e^d\left(\frac{e^{-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\left(x\left(b\sqrt{b^2-4ac}-2ac+b^2\right)e^{\frac{e\sqrt{b^2-4ac}}{c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)+x\left(b\sqrt{b^2-4ac}+2ac-b^2\right)\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2c\right.}{2c}\right.\right.}{x\sqrt{b^2-4ac}}\right.}{2a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] (E^d*(-2*(b - a*e)*ExpIntegralEi[e*x] + (-2*a*Sqrt[b^2 - 4*a*c]*E
^((e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)) + (b^2 - 2*a*c + b*S
qrt[b^2 - 4*a*c])*E^((Sqrt[b^2 - 4*a*c]*e)/c)*x*ExpIntegralEi[(e*
(b - Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)] + (-b^2 + 2*a*c + b*Sqrt[
b^2 - 4*a*c])*x*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))
/(2*c)])/(Sqrt[b^2 - 4*a*c]*E^(((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))
*x)))/(2*a^2)
```

Maple [B] time = 0.039, size = 561, normalized size = 2.7

$$e\left(-\frac{e^{ex+d}}{aex}-\frac{(ea-b)\,e^{d}Ei(1,-ex)}{a^2e}\right.$$
$$-\frac{1}{2\,a^2e}\left(-2\,e^{1/2\,\frac{-be+2\,cd+\sqrt{-4\,ace^2+b^2e^2}}{c}}Ei\left(1,1/2\,\frac{-2\,(ex+d)\,c-be+2\,cd+\sqrt{-4\,ace^2+b^2e^2}}{c}\right)ace+e^{\frac{1}{2c}\left(-be+2\,cd+\sqrt{-4\,ace^2+b^2e^2}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*x+d)/x^2/(c*x^2+b*x+a),x)
```

```
[Out] e*(-exp(e*x+d)/a/x/e-1/a^2/e*(a*e-b)*exp(d)*Ei(1,-e*x)-1/2*(-2*ex
p(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*
x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*a*c*e+exp(1/2/c*(
-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*
e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b^2*e+2*exp(-1/2*(b*e-2*c*
d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d
+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*a*c*e-exp(-1/2*(b*e-2*c*d+(-4*a*c
*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*
e^2+b^2*e^2)^(1/2))/c)*b^2*e+exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^
2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e
^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*b+exp(-1/2*(b*e-2*c*d+(-
4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4
*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*b)/a^2/e/(
-4*a*c*e^2+b^2*e^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(ex+d)}}{(cx^2+bx+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e*x + d)/((c*x^2 + b*x + a)*x^2), x)
```

Fricas [A] time = 0.273715, size = 382, normalized size = 1.8

$$\frac{\left(bc\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}x+\left(b^2-2\,ac\right)ex\right)\mathrm{Ei}\left(\frac{2\,cex+be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)}+\left(bc\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}x-\left(b^2-2\,ac\right)ex\right)\mathrm{Ei}\left(\cdots\right.}{2\,a^2c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*((b*c*sqrt((b^2 - 4*a*c)*e^2/c^2)*x + (b^2 - 2*a*c)*e*x)*Ei(1
/2*(2*c*e*x + b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1/2*(2*c
*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + (b*c*sqrt((b^2 - 4
*a*c)*e^2/c^2)*x - (b^2 - 2*a*c)*e*x)*Ei(1/2*(2*c*e*x + b*e + c*s
qrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1/2*(2*c*d - b*e - c*sqrt((b^2
- 4*a*c)*e^2/c^2))/c) + 2*((a*c*e - b*c)*x*Ei(e*x)*e^d - a*c*e^(e
*x + d))*sqrt((b^2 - 4*a*c)*e^2/c^2))/(a^2*c*sqrt((b^2 - 4*a*c)*e
^2/c^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*x+d)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(ex+d)}}{(cx^2+bx+a)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e*x + d)/((c*x^2 + b*x + a)*x^2), x)
```

3.468 $\int \frac{e^{d+ex}}{x(a+bx+cx^2)} dx$

Optimal. Leaf size=169

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a}+\frac{e^d\text{ExpIntegralEi}(ex)}{a}$$

```
[Out] (E^d*ExpIntegralEi[e*x])/a - ((1 + b/Sqrt[b^2 - 4*a*c])*E^(d - ((
b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[b^2 -
 4*a*c] + 2*c*x))/(2*c)])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*E^(d
 - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*a)
```

Rubi [A] time = 0.705651, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$

$$-\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a}-\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2a}+\frac{e^d\text{ExpIntegralEi}(ex)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] (E^d*ExpIntegralEi[e*x])/a - ((1 + b/Sqrt[b^2 - 4*a*c])*E^(d - ((
b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[b^2 -
 4*a*c] + 2*c*x))/(2*c)])/(2*a) - ((1 - b/Sqrt[b^2 - 4*a*c])*E^(d
 - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*a)
```

Rubi in Sympy [A] time = 58.1935, size = 170, normalized size = 1.01

$$\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{\frac{2cd-e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx+\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2a\sqrt{-4ac+b^2}}-\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{\frac{-be+2cd+e\sqrt{-4ac+b^2}}{2c}}\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx-\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2a\sqrt{-4ac+b^2}}+\frac{e^d\,\text{Ei}\,(ex)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*x+d)/x/(c*x**2+b*x+a),x)
```

```
[Out] (b - sqrt(-4*a*c + b**2))*exp((2*c*d - e*(b + sqrt(-4*a*c + b**2)
))/(2*c))*Ei(e*(b/2 + c*x + sqrt(-4*a*c + b**2)/2)/c)/(2*a*sqrt(-
4*a*c + b**2)) - (b + sqrt(-4*a*c + b**2))*exp((-b*e + 2*c*d + e*
```

```
sqrt(-4*a*c + b**2))/(2*c))*Ei(e*(b/2 + c*x - sqrt(-4*a*c + b**2)
/2)/c)/(2*a*sqrt(-4*a*c + b**2)) + exp(d)*Ei(e*x)/a
```

Mathematica [A] time = 0.642598, size = 163, normalized size = 0.96

$$\frac{e^d\left(\frac{e^{-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\left(\left(b-\sqrt{b^2-4ac}\right)\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)-\left(\sqrt{b^2-4ac}+b\right)e^{\frac{e\sqrt{b^2-4ac}}{c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)\right)}{\sqrt{b^2-4ac}}+2\text{ExpIr}\right.}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] (E^d*(2*ExpIntegralEi[e*x] + (-((b + Sqrt[b^2 - 4*a*c])*E^((Sqrt[
b^2 - 4*a*c]*e)/c)*ExpIntegralEi[(e*(b - Sqrt[b^2 - 4*a*c] + 2*c*
x))/(2*c)]) + (b - Sqrt[b^2 - 4*a*c])*ExpIntegralEi[(e*(b + Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(Sqrt[b^2 - 4*a*c]*E^(((b + Sqrt[b
^2 - 4*a*c])*e)/(2*c)))))/(2*a)
```

Maple [B] time = 0.027, size = 369, normalized size = 2.2

$$-\frac{e^d Ei(1,-ex)}{a}+\frac{1}{2a}\left(e^{\frac{1}{2c}\left(-be+2cd+\sqrt{-4ace^2+b^2e^2}\right)}Ei\left(1,\frac{1}{2c}\left(-2(ex+d)c-be+2cd+\sqrt{-4ace^2+b^2e^2}\right)\right)be-e^{-\frac{1}{2c}\left(be-2cd+\sqrt{-4ace^2+b^2e^2}\right)}E\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*x+d)/x/(c*x^2+b*x+a),x)
```

```
[Out] -1/a*exp(d)*Ei(1,-e*x)+1/2*(exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2
*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^
2)^(1/2))/c)*b*e-exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/
c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c
)*b*e+exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2
*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e
^2+b^2*e^2)^(1/2)+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))
/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/
c)*(-4*a*c*e^2+b^2*e^2)^(1/2))/a/(-4*a*c*e^2+b^2*e^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(ex+d)}}{(cx^2+bx+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e*x + d)/((c*x^2 + b*x + a)*x), x)
```

Fricas [A] time = 0.26084, size = 324, normalized size = 1.92

$$\frac{2\,c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}\mathrm{Ei}\left(ex\right)e^d - \left(be + c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}\right)\mathrm{Ei}\left(\frac{2\,cex+be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)} + \left(be - c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}\right)\mathrm{Ei}\left(\frac{2\,c \cdots}{\cdots}\right)}{2\,ac\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*c*sqrt((b^2 - 4*a*c)*e^2/c^2)*Ei(e*x)*e^d - (b*e + c*sqrt(
(b^2 - 4*a*c)*e^2/c^2))*Ei(1/2*(2*c*e*x + b*e - c*sqrt((b^2 - 4*a
*c)*e^2/c^2))/c)*e^(1/2*(2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c
^2))/c) + (b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))*Ei(1/2*(2*c*e*x +
 b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1/2*(2*c*d - b*e - c*
sqrt((b^2 - 4*a*c)*e^2/c^2))/c))/(a*c*sqrt((b^2 - 4*a*c)*e^2/c^2)
)
```

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

$$e^d \int \frac{e^{ex}}{ax + bx^2 + cx^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*x+d)/x/(c*x**2+b*x+a),x)
```

```
[Out] exp(d)*Integral(exp(e*x)/(a*x + b*x**2 + c*x**3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(ex+d)}}{(cx^2 + bx + a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e*x + d)/((c*x^2 + b*x + a)*x), x)
```

3.469 $\int \frac{e^{d+ex}}{a+bx+cx^2}\,dx$

Optimal. Leaf size=138

$$\frac{e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{\sqrt{b^2-4ac}}-\frac{e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{\sqrt{b^2-4ac}}$$

```
[Out] (E^(d - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b -
Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/Sqrt[b^2 - 4*a*c] - (E^(d - (
(b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[b^2
- 4*a*c] + 2*c*x))/(2*c)])/Sqrt[b^2 - 4*a*c]
```

Rubi [A] time = 0.314011, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{\sqrt{b^2-4ac}}-\frac{e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] (E^(d - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b -
Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/Sqrt[b^2 - 4*a*c] - (E^(d - (
(b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[b^2
- 4*a*c] + 2*c*x))/(2*c)])/Sqrt[b^2 - 4*a*c]
```

Rubi in Sympy [A] time = 34.2545, size = 126, normalized size = 0.91

$$-\frac{e^{\frac{2cd-e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx+\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{\sqrt{-4ac+b^2}}+\frac{e^{\frac{-be+2cd+e\sqrt{-4ac+b^2}}{2c}}\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx-\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] -exp((2*c*d - e*(b + sqrt(-4*a*c + b**2)))/(2*c))*Ei(e*(b/2 + c*x
 + sqrt(-4*a*c + b**2)/2)/c)/sqrt(-4*a*c + b**2) + exp((-b*e + 2*
c*d + e*sqrt(-4*a*c + b**2))/(2*c))*Ei(e*(b/2 + c*x - sqrt(-4*a*c
 + b**2)/2)/c)/sqrt(-4*a*c + b**2)
```

Mathematica [A] time = 0.138707, size = 127, normalized size = 0.92

$$\frac{e^{\frac{e\left(\sqrt{b^2-4ac}-b\right)}{2c}+d}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)-e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] (E^(d + ((-b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b -
 Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)] - E^(d - ((b + Sqrt[b^2 - 4*a
*c])*e)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/
(2*c)])/Sqrt[b^2 - 4*a*c]
```

Maple [A] time = 0.018, size = 169, normalized size = 1.2

$$-e\left(e^{\frac{1}{2c}\left(-be+2cd+\sqrt{-4ace^2+b^2e^2}\right)}Ei\left(1,\frac{1}{2c}\left(-2\left(ex+d\right)c-be+2cd+\sqrt{-4ace^2+b^2e^2}\right)\right)-e^{-\frac{1}{2c}\left(be-2cd+\sqrt{-4ace^2+b^2e^2}\right)}Ei\left(1,\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] -e*(exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(
-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)-exp(-1/2*(b
*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*
e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c))/(-4*a*c*e^2+b^2*e^2)^(1/2
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(ex+d)}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e*x + d)/(c*x^2 + b*x + a), x)
```

Fricas [A] time = 0.247704, size = 223, normalized size = 1.62

$$\frac{e\mathrm{Ei}\left(\frac{2\,cex+be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)}-e\mathrm{Ei}\left(\frac{2\,cex+be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)}}{c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (e*Ei(1/2*(2*c*e*x + b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1
/2*(2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) - e*Ei(1/2*(2
*c*e*x + b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1/2*(2*c*d -
b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c))/(c*sqrt((b^2 - 4*a*c)*e^
2/c^2))
```

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

$$e^{d}\int \frac{e^{ex}}{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] exp(d)*Integral(exp(e*x)/(a + b*x + c*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{(ex+d)}}{cx^2 + bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(e^(e*x + d)/(c*x^2 + b*x + a), x)
```

3.470 $\int \frac{e^{d+ex}x}{a+bx+cx^2}\,dx$

Optimal. Leaf size=158

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c}$$

```
[Out] ((1 - b/Sqrt[b^2 - 4*a*c])*E^(d - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*
c))*ExpIntegralEi[(e*(b - Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*
c) + ((1 + b/Sqrt[b^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e
)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)]
)/(2*c)
```

Rubi [A] time = 0.371302, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c}+\frac{\left(\frac{b}{\sqrt{b^2-4ac}}+1\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(d + e*x)*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((1 - b/Sqrt[b^2 - 4*a*c])*E^(d - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*
c))*ExpIntegralEi[(e*(b - Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*
c) + ((1 + b/Sqrt[b^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e
)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)]
)/(2*c)
```

Rubi in Sympy [A] time = 33.5924, size = 160, normalized size = 1.01

$$-\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{\frac{-be+2cd+e\sqrt{-4ac+b^2}}{2c}}\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx-\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2c\sqrt{-4ac+b^2}}+\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{\frac{2cd-e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx+\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2c\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*x+d)*x/(c*x**2+b*x+a),x)
```

```
[Out] -(b - sqrt(-4*a*c + b**2))*exp((-b*e + 2*c*d + e*sqrt(-4*a*c + b*
*2))/(2*c))*Ei(e*(b/2 + c*x - sqrt(-4*a*c + b**2)/2)/c)/(2*c*sqrt
(-4*a*c + b**2)) + (b + sqrt(-4*a*c + b**2))*exp((2*c*d - e*(b +
```

```
sqrt(-4*a*c + b**2)))/(2*c))*Ei(e*(b/2 + c*x + sqrt(-4*a*c + b**2
)/2)/c)/(2*c*sqrt(-4*a*c + b**2))
```

Mathematica [A] time = 0.208282, size = 153, normalized size = 0.97

$$\frac{e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\left(\left(\sqrt{b^2-4ac}-b\right)e^{\frac{e\sqrt{b^2-4ac}}{c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)+\left(\sqrt{b^2-4ac}+b\right)\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}\right.}{2c}\right.\right.}{2c\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(d + e*x)*x)/(a + b*x + c*x^2),x]
```

```
[Out] (E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*((-b + Sqrt[b^2 - 4*a*
c])*E^((Sqrt[b^2 - 4*a*c]*e)/c)*ExpIntegralEi[(e*(b - Sqrt[b^2 -
4*a*c] + 2*c*x))/(2*c)] + (b + Sqrt[b^2 - 4*a*c])*ExpIntegralEi[(
e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)]))/(2*c*Sqrt[b^2 - 4*a*c
])
```

Maple [B] time = 0.019, size = 685, normalized size = 4.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*x+d)*x/(c*x^2+b*x+a),x)
```

```
[Out] 1/e^2*(-1/2*e^2*(-exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2
)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/
c)*b*e+2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,
1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*c*d+ex
p(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*
x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b*e-2*exp(-1/2*(b
*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*
e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*c*d+exp(1/2/c*(-b*e+2*c*d+
(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4
*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)+exp(-1/2*(
b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b
*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2
))/c/(-4*a*c*e^2+b^2*e^2)^(1/2)+d*e^2*(exp(1/2/c*(-b*e+2*c*d+(-4*
a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c
*e^2+b^2*e^2)^(1/2))/c)-exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^
(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(
1/2))/c))/(-4*a*c*e^2+b^2*e^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{xe^{(ex+d)}}{cex^2+bex+ae}+\int\frac{\left(cx^2e^d-ae^d\right)e^{(ex)}}{c^2ex^4+2\,bcex^3+2\,abex+a^2e+(b^2e+2\,ace)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x*e^(e*x + d)/(c*e*x^2 + b*e*x + a*e) + integrate((c*x^2*e^d - a*
e^d)*e^(e*x)/(c^2*e*x^4 + 2*b*c*e*x^3 + 2*a*b*e*x + a^2*e + (b^2*
```

```
e + 2*a*c*e)*x^2), x)
```

Fricas [A] time = 0.238608, size = 285, normalized size = 1.8

$$-\frac{\left(be - c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}\right)\mathrm{Ei}\left(\frac{2\,cex+be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)} - \left(be + c\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}\right)\mathrm{Ei}\left(\frac{2\,cex+be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)}}{2\,c^2\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*((b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))*Ei(1/2*(2*c*e*x + b*e
 - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1/2*(2*c*d - b*e + c*sqrt
((b^2 - 4*a*c)*e^2/c^2))/c) - (b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2
))*Ei(1/2*(2*c*e*x + b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1
/2*(2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c))/(c^2*sqrt((b
^2 - 4*a*c)*e^2/c^2))
```

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

$$e^{d}\int \frac{xe^{ex}}{a + bx + cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*x+d)*x/(c*x**2+b*x+a),x)
```

```
[Out] exp(d)*Integral(x*exp(e*x)/(a + b*x + c*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^{(ex+d)}}{cx^2 + bx + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x*e^(e*x + d)/(c*x^2 + b*x + a), x)
```

3.471 $\int \frac{e^{d+ex}x^2}{a+bx+cx^2}\,dx$

Optimal. Leaf size=186

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^2}+\frac{e^{d+ex}}{ce}$$

```
[Out] E^(d + e*x)/(c*e) - ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*E^(d -
 ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[b^
2 - 4*a*c] + 2*c*x))/(2*c)])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b
^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegra
lEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*c^2)
```

Rubi [A] time = 0.736465, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$-\frac{\left(b-\frac{b^2-2ac}{\sqrt{b^2-4ac}}\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^2}-\frac{\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}+b\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^2}+\frac{e^{d+ex}}{ce}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(d + e*x)*x^2)/(a + b*x + c*x^2),x]
```

```
[Out] E^(d + e*x)/(c*e) - ((b - (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*E^(d -
 ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[b^
2 - 4*a*c] + 2*c*x))/(2*c)])/(2*c^2) - ((b + (b^2 - 2*a*c)/Sqrt[b
^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegra
lEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*c^2)
```

Rubi in Sympy [A] time = 64.5475, size = 190, normalized size = 1.02

$$\frac{e^{d+ex}}{ce}+\frac{\left(-2ac+b^2-b\sqrt{-4ac+b^2}\right)e^{\frac{-be+2cd+e\sqrt{-4ac+b^2}}{2c}}\,\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx-\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2c^2\sqrt{-4ac+b^2}}-\frac{\left(-2ac+b^2+b\sqrt{-4ac+b^2}\right)e^{\frac{2cd-e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\,\text{Ei}\left(\frac{e\left(\frac{b}{2}+cx+\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2c^2\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*x+d)*x**2/(c*x**2+b*x+a),x)
```

```
[Out] exp(d + e*x)/(c*e) + (-2*a*c + b**2 - b*sqrt(-4*a*c + b**2))*exp(
(-b*e + 2*c*d + e*sqrt(-4*a*c + b**2))/(2*c))*Ei(e*(b/2 + c*x - s
qrt(-4*a*c + b**2)/2)/c)/(2*c**2*sqrt(-4*a*c + b**2)) - (-2*a*c +
```

```
 b**2 + b*sqrt(-4*a*c + b**2))*exp((2*c*d - e*(b + sqrt(-4*a*c +
b**2)))/(2*c))*Ei(e*(b/2 + c*x + sqrt(-4*a*c + b**2)/2)/c)/(2*c**
2*sqrt(-4*a*c + b**2))
```

Mathematica [A] time = 0.555614, size = 217, normalized size = 1.17

$$-\frac{e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\left(e\left(b\sqrt{b^2-4ac}+2ac-b^2\right)e^{\frac{e\sqrt{b^2-4ac}}{c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)+e\left(b\sqrt{b^2-4ac}-2ac+b^2\right)\text{Exp}\right.}{2c^2e\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(d + e*x)*x^2)/(a + b*x + c*x^2),x]
```

```
[Out] -(E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*(-2*c*Sqrt[b^2 - 4*a*
c]*E^((e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)) + (-b^2 + 2*a*c
+ b*Sqrt[b^2 - 4*a*c])*e*E^((Sqrt[b^2 - 4*a*c]*e)/c)*ExpIntegralE
i[(e*(b - Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)] + (b^2 - 2*a*c + b*S
qrt[b^2 - 4*a*c])*e*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c
*x))/(2*c)]))/(2*c^2*Sqrt[b^2 - 4*a*c]*e)
```

Maple [B] time = 0.024, size = 1730, normalized size = 9.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*x+d)*x^2/(c*x^2+b*x+a),x)
```

```
[Out] 1/e^3*(e^2/c*exp(e*x+d)+1/2/c^2*e^2*(2*exp(1/2/c*(-b*e+2*c*d+(-4*
a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c
*e^2+b^2*e^2)^(1/2))/c)*a*c*e^2-exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2
+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^
2*e^2)^(1/2))/c)*b^2*e^2+2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*
e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2
)^(1/2))/c)*b*c*d*e-2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^
(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/
2))/c)*c^2*d^2-2*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/
c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c
)*a*c*e^2+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1
,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b^2*e
^2-2*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2
*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b*c*d*e+2*
exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(
e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*c^2*d^2+exp(1/2
/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*
c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(
1/2)*b*e-2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(
1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*
a*c*e^2+b^2*e^2)^(1/2)*c*d+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^
2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2
)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*b*e-2*exp(-1/2*(b*e-2*c*d+
(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(
-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*c*d)/(-4
*a*c*e^2+b^2*e^2)^(1/2)-d^2*e^2*(exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^
2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b
^2*e^2)^(1/2))/c)-exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))
/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/
c))/(-4*a*c*e^2+b^2*e^2)^(1/2)+d*e^2*(-exp(1/2/c*(-b*e+2*c*d+(-4*
a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c
*e^2+b^2*e^2)^(1/2))/c)*b*e+2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b
^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*
```

```
e^2)^(1/2))/c)*c*d+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)
)/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))
/c)*b*e-2*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1
,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*c*d+e
xp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e
*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*
e^2)^(1/2)+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(
1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*
a*c*e^2+b^2*e^2)^(1/2))/c/(-4*a*c*e^2+b^2*e^2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{x^2e^{(ex+d)}}{cex^2 + bex + ae} - \int \frac{\left(bx^2e^d + 2\,axe^d\right)e^{(ex)}}{c^2ex^4 + 2\,bcex^3 + 2\,abex + a^2e + (b^2e + 2\,ace)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x^2*e^(e*x + d)/(c*e*x^2 + b*e*x + a*e) - integrate((b*x^2*e^d +
2*a*x*e^d)*e^(e*x)/(c^2*e*x^4 + 2*b*c*e*x^3 + 2*a*b*e*x + a^2*e +
 (b^2*e + 2*a*c*e)*x^2), x)
```

Fricas [A] time = 0.255121, size = 358, normalized size = 1.92

$$\frac{2\,c^2\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}e^{(ex+d)} - \left(bce\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}} - \left(b^2 - 2\,ac\right)e^2\right)\mathrm{Ei}\left(\frac{2\,cex+be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)} - \left(bce\sqrt{\frac{(b^2-4\,ac)}{c^2}}\right.}{2\,c^3e\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*c^2*sqrt((b^2 - 4*a*c)*e^2/c^2)*e^(e*x + d) - (b*c*e*sqrt(
(b^2 - 4*a*c)*e^2/c^2) - (b^2 - 2*a*c)*e^2)*Ei(1/2*(2*c*e*x + b*e
 - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e^(1/2*(2*c*d - b*e + c*sqrt
((b^2 - 4*a*c)*e^2/c^2))/c) - (b*c*e*sqrt((b^2 - 4*a*c)*e^2/c^2)
+ (b^2 - 2*a*c)*e^2)*Ei(1/2*(2*c*e*x + b*e + c*sqrt((b^2 - 4*a*c)
*e^2/c^2))/c)*e^(1/2*(2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2)
)/c))/(c^3*e*sqrt((b^2 - 4*a*c)*e^2/c^2))
```

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

$$e^d\int \frac{x^2e^{ex}}{a + bx + cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*x+d)*x**2/(c*x**2+b*x+a),x)
```

```
[Out] exp(d)*Integral(x**2*exp(e*x)/(a + b*x + c*x**2), x)
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 e^{(ex+d)}}{cx^2 + bx + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x^2*e^(e*x + d)/(c*x^2 + b*x + a), x)
```

3.472 $\int \frac{e^{d+ex}x^3}{a+bx+cx^2}\,dx$

Optimal. Leaf size=232

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^3}-\frac{be^{d+ex}}{c^2e}-\frac{e^{d+ex}}{ce^2}+\frac{xe^{d+ex}}{ce}$$

```
[Out] -(E^(d + e*x)/(c*e^2)) - (b*E^(d + e*x))/(c^2*e) + (E^(d + e*x)*x
)/(c*e) + ((b^2 - a*c - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*E^(d
 - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*c^3) + ((b^2 - a*c + (b*(b^2 -
3*a*c))/Sqrt[b^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*
c))*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*
c^3)
```

Rubi [A] time = 0.88973, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174

$$\frac{\left(-\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)e^{d-\frac{e\left(b-\sqrt{b^2-4ac}\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(-\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^3}+\frac{\left(\frac{b(b^2-3ac)}{\sqrt{b^2-4ac}}-ac+b^2\right)e^{d-\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{2c}\right)}{2c^3}-\frac{be^{d+ex}}{c^2e}-\frac{e^{d+ex}}{ce^2}+\frac{xe^{d+ex}}{ce}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(d + e*x)*x^3)/(a + b*x + c*x^2),x]
```


```
[Out] -(E^(d + e*x)/(c*e^2)) - (b*E^(d + e*x))/(c^2*e) + (E^(d + e*x)*x
)/(c*e) + ((b^2 - a*c - (b*(b^2 - 3*a*c))/Sqrt[b^2 - 4*a*c])*E^(d
 - ((b - Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b - Sqrt[
b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*c^3) + ((b^2 - a*c + (b*(b^2 -
3*a*c))/Sqrt[b^2 - 4*a*c])*E^(d - ((b + Sqrt[b^2 - 4*a*c])*e)/(2*
c))*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)])/(2*
c^3)
```

Rubi in Sympy [A] time = 70.8033, size = 231, normalized size = 1.

$$-\frac{be^{d+ex}}{c^2e}+\frac{xe^{d+ex}}{ce}-\frac{e^{d+ex}}{ce^2}-\frac{\left(b\left(-3ac+b^2\right)-\sqrt{-4ac+b^2}\left(-ac+b^2\right)\right)e^{\frac{-be+2cd+e\sqrt{-4ac+b^2}}{2c}}\operatorname{Ei}\left(\frac{e\left(\frac{b}{2}+cx-\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2c^3\sqrt{-4ac+b^2}}+\frac{\left(b\left(-3ac+b^2\right)+\sqrt{-4ac+b^2}\left(-ac+b^2\right)\right)e^{\frac{2cd-e\left(b+\sqrt{-4ac+b^2}\right)}{2c}}\operatorname{Ei}\left(\frac{e\left(\frac{b}{2}+cx+\frac{\sqrt{-4ac+b^2}}{2}\right)}{c}\right)}{2c^3\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(e*x+d)*x**3/(c*x**2+b*x+a),x)
```

```
[Out] -b*exp(d + e*x)/(c**2*e) + x*exp(d + e*x)/(c*e) - exp(d + e*x)/(c
*e**2) - (b*(-3*a*c + b**2) - sqrt(-4*a*c + b**2)*(-a*c + b**2))*
exp((-b*e + 2*c*d + e*sqrt(-4*a*c + b**2))/(2*c))*Ei(e*(b/2 + c*x
 - sqrt(-4*a*c + b**2)/2)/c)/(2*c**3*sqrt(-4*a*c + b**2)) + (b*(-
3*a*c + b**2) + sqrt(-4*a*c + b**2)*(-a*c + b**2))*exp((2*c*d - e
*(b + sqrt(-4*a*c + b**2)))/(2*c))*Ei(e*(b/2 + c*x + sqrt(-4*a*c
+ b**2)/2)/c)/(2*c**3*sqrt(-4*a*c + b**2))
```

Mathematica [A] time = 0.608737, size = 268, normalized size = 1.16

$$\frac{e^{d-\frac{be}{c}}\left(-2c\sqrt{b^2-4ac}e^{e\left(\frac{b}{c}+x\right)}(be+c(-e)x+c)+e^2\left(b^2\sqrt{b^2-4ac}-ac\sqrt{b^2-4ac}+3abc-b^3\right)e^{\frac{e\left(\sqrt{b^2-4ac}+b\right)}{2c}}\text{ExpIntegralEi}\left(\right.}{2c^3e^2\sqrt{b^2-}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(d + e*x)*x^3)/(a + b*x + c*x^2),x]
```

```
[Out] (E^(d - (b*e)/c)*(-2*c*Sqrt[b^2 - 4*a*c]*E^(e*(b/c + x))*(c + b*e
 - c*e*x) + (-b^3 + 3*a*b*c + b^2*Sqrt[b^2 - 4*a*c] - a*c*Sqrt[b^
2 - 4*a*c])*e^2*E^(((b + Sqrt[b^2 - 4*a*c])*e)/(2*c))*ExpIntegral
Ei[(e*(b - Sqrt[b^2 - 4*a*c] + 2*c*x))/(2*c)] + (b^3 - 3*a*b*c +
b^2*Sqrt[b^2 - 4*a*c] - a*c*Sqrt[b^2 - 4*a*c])*e^2*E^(((b - Sqrt[
b^2 - 4*a*c])*e)/(2*c))*ExpIntegralEi[(e*(b + Sqrt[b^2 - 4*a*c] +
 2*c*x))/(2*c)]))/(2*c^3*Sqrt[b^2 - 4*a*c]*e^2)
```

Maple [B] time = 0.031, size = 3532, normalized size = 15.2

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(e*x+d)*x^3/(c*x^2+b*x+a),x)
```

```
[Out] 1/e^4*(-e^2*exp(e*x+d)*(-(e*x+d)*c+b*e-2*c*d+c)/c^2+1/2/c^3*e^2*(
-3*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-
2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*a*b*c*e^3+6*
exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(
e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*a*c^2*d*e^2+exp
(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x
+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b^3*e^3-3*exp(1/2/
c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c
-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b^2*c*d*e^2+3*exp(1/2/c
*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-
b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b*c^2*d^2*e-2*exp(1/2/c*
(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b
*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*c^3*d^3+3*exp(-1/2*(b*e-2
*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*
c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*a*b*c*e^3-6*exp(-1/2*(b*e-2*c*
d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d
+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*a*c^2*d*e^2-exp(-1/2*(b*e-2*c*d+(
-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-
4*a*c*e^2+b^2*e^2)^(1/2))/c)*b^3*e^3+3*exp(-1/2*(b*e-2*c*d+(-4*a*
c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c
*e^2+b^2*e^2)^(1/2))/c)*b^2*c*d*e^2-3*exp(-1/2*(b*e-2*c*d+(-4*a*c
*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*
e^2+b^2*e^2)^(1/2))/c)*b*c^2*d^2*e+2*exp(-1/2*(b*e-2*c*d+(-4*a*c*
e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e
^2+b^2*e^2)^(1/2))/c)*c^3*d^3+exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b
```

```
^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*
e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*a*c*e^2-exp(1/2/c*(-b*e
+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*
c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*b^2
*e^2+3*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/
2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*
e^2+b^2*e^2)^(1/2)*b*c*d*e-3*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^
2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e
^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*c^2*d^2+exp(-1/2*(b*e-2*
c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c
*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*a*c*
e^2-exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*
(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2
+b^2*e^2)^(1/2)*b^2*e^2+3*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2
)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)
^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*b*c*d*e-3*exp(-1/2*(b*e-2*c
*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*
d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*c^2*d
^2)/(-4*a*c*e^2+b^2*e^2)^(1/2)+d^3*e^2*(exp(1/2/c*(-b*e+2*c*d+(-4
*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*
c*e^2+b^2*e^2)^(1/2))/c)-exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)
^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^
(1/2))/c))/(-4*a*c*e^2+b^2*e^2)^(1/2)-3/2*d^2*e^2*(-exp(1/2/c*(-b
*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+
2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b*e+2*exp(1/2/c*(-b*e+2*c*d+
(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4
*a*c*e^2+b^2*e^2)^(1/2))/c)*c*d+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b
^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^
2*e^2)^(1/2))/c)*b*e-2*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(
1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1
/2))/c)*c*d+exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei
(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4
*a*c*e^2+b^2*e^2)^(1/2)+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^
(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(
1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2))/c/(-4*a*c*e^2+b^2*e^2)^(1/2)
-3*d*(e^2/c*exp(e*x+d)+1/2/c^2*e^2*(2*exp(1/2/c*(-b*e+2*c*d+(-4*a
*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*
e^2+b^2*e^2)^(1/2))/c)*a*c*e^2-exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+
b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2
*e^2)^(1/2))/c)*b^2*e^2+2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e
^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)
^(1/2))/c)*b*c*d*e-2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(
1/2)))*Ei(1,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2
))/c)*c^2*d^2-2*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c
)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)
*a*c*e^2+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,
-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b^2*e^
2-2*exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*
(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*b*c*d*e+2*e
xp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e
*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*c^2*d^2+exp(1/2/
c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1,1/2*(-2*(e*x+d)*c
-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1
/2)*b*e-2*exp(1/2/c*(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2)))*Ei(1
,1/2*(-2*(e*x+d)*c-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a
*c*e^2+b^2*e^2)^(1/2)*c*d+exp(-1/2*(b*e-2*c*d+(-4*a*c*e^2+b^2*e^2
)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-4*a*c*e^2+b^2*e^2)
^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*b*e-2*exp(-1/2*(b*e-2*c*d+(
-4*a*c*e^2+b^2*e^2)^(1/2))/c)*Ei(1,-1/2*(2*(e*x+d)*c+b*e-2*c*d+(-
4*a*c*e^2+b^2*e^2)^(1/2))/c)*(-4*a*c*e^2+b^2*e^2)^(1/2)*c*d)/(-4*
a*c*e^2+b^2*e^2)^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(cex^3e^d - cx^2e^d - bxe^d\right)e^{(ex)}}{c^2e^2x^2 + bce^2x + ace^2} - \int -\frac{\left(\left(bee^d + 2\,ce^d\right)ax + \left(b^2ee^d - 2\,acee^d\right)x^2 + abe^d\right)e^{(ex)}}{c^3e^2x^4 + 2\,bc^2e^2x^3 + 2\,abce^2x + a^2ce^2 + (b^2ce^2 + 2\,ac^2e^2)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(e*x + d)/(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] (c*e*x^3*e^d - c*x^2*e^d - b*x*e^d)*e^(e*x)/(c^2*e^2*x^2 + b*c*e^
2*x + a*c*e^2) - integrate(-((b*e*e^d + 2*c*e^d)*a*x + (b^2*e*e^d
 - 2*a*c*e*e^d)*x^2 + a*b*e^d)*e^(e*x)/(c^3*e^2*x^4 + 2*b*c^2*e^2
*x^3 + 2*a*b*c*e^2*x + a^2*c*e^2 + (b^2*c*e^2 + 2*a*c^2*e^2)*x^2)
, x)
```

Fricas [A] time = 0.266401, size = 413, normalized size = 1.78

$$-\frac{\left(\left(b^3-3\,abc\right)e^3-\left(b^2c-ac^2\right)e^2\sqrt{\frac{(b^2-4\,ac)e^2}{c^2}}\right)\mathrm{Ei}\left(\frac{2\,cex+be-c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)e^{\left(\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{2\,c}\right)}-\left(\left(b^3-3\,abc\right)e^3+\left(b^2c-\right.\right.}{2\,c^4e^2\sqrt{\frac{(b^2-4\,ac)}{c^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(e*x + d)/(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] -1/2*(((b^3 - 3*a*b*c)*e^3 - (b^2*c - a*c^2)*e^2*sqrt((b^2 - 4*a*
c)*e^2/c^2))*Ei(1/2*(2*c*e*x + b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2
))/c)*e^(1/2*(2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) - (
(b^3 - 3*a*b*c)*e^3 + (b^2*c - a*c^2)*e^2*sqrt((b^2 - 4*a*c)*e^2/
c^2))*Ei(1/2*(2*c*e*x + b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*e
^(1/2*(2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) - 2*(c^3*e
*x - b*c^2*e - c^3)*sqrt((b^2 - 4*a*c)*e^2/c^2)*e^(e*x + d))/(c^4
*e^2*sqrt((b^2 - 4*a*c)*e^2/c^2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(e*x+d)*x**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 e^{(ex+d)}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(e*x + d)/(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^3*e^(e*x + d)/(c*x^2 + b*x + a), x)
```

3.473 $\int \frac{4^x}{a+2^x b} \, dx$

Optimal. Leaf size=30

$$\frac{2^x}{b \log(2)} - \frac{a \log \left(a + b 2^x\right)}{b^2 \log(2)}$$

```
[Out] 2^x/(b*Log[2]) - (a*Log[a + 2^x*b])/(b^2*Log[2])
```

Rubi [A] time = 0.0637345, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2^x}{b \log(2)} - \frac{a \log \left(a + b 2^x\right)}{b^2 \log(2)}$$

Antiderivative was successfully verified.

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

```
[Out] 2^x/(b*Log[2]) - (a*Log[a + 2^x*b])/(b^2*Log[2])
```

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

$$-\frac{a \log \left(2^x b + a\right)}{b^2 \log(2)} + \frac{\int^{2^x} \frac{1}{b} \, dx}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(4**x/(a+2**x*b),x)
```

```
[Out] -a*log(2**x*b + a)/(b**2*log(2)) + Integral(1/b, (x, 2**x))/log(2
)
```

Mathematica [A] time = 0.0303491, size = 28, normalized size = 0.93

$$\frac{b 2^x - a \log \left(\frac{b 2^x}{a} + 1\right)}{b^2 \log(2)}$$

Antiderivative was successfully verified.

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

```
[Out] (2^x*b - a*Log[1 + (2^x*b)/a])/(b^2*Log[2])
```

Maple [A] time = 0.023, size = 35, normalized size = 1.2

$$\frac{e^{x \ln(2)}}{\ln(2) b} - \frac{a \ln \left(a + e^{x \ln(2)} b\right)}{\ln(2) b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] 1/ln(2)/b*exp(x*ln(2))-1/ln(2)/b^2*a*ln(a+exp(x*ln(2))*b)
```

Maxima [A] time = 0.855279, size = 41, normalized size = 1.37

$$\frac{2^x}{b\log(2)} - \frac{a\log(2^x b + a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] 2^x/(b*log(2)) - a*log(2^x*b + a)/(b^2*log(2))
```

Fricas [A] time = 0.251235, size = 34, normalized size = 1.13

$$\frac{2^x b - a\log(2^x b + a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] (2^x*b - a*log(2^x*b + a))/(b^2*log(2))
```

Sympy [A] time = 0.168714, size = 31, normalized size = 1.03

$$-\frac{a\log\left(2^x + \frac{a}{b}\right)}{b^2\log(2)} + \begin{cases} \frac{2^x}{b\log(2)} & \text{for}\ b\log(2) \neq 0 \\ \frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4**x/(a+2**x*b),x)

[Out] -a*log(2**x + a/b)/(b**2*log(2)) + Piecewise((2**x/(b*log(2)), Ne
(b*log(2), 0)), (x/b, True))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x}{2^x b + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate(4^x/(2^x*b + a), x)
```

3.474 $\int \frac{2^{2x}}{a+2^x b} dx$

Optimal. Leaf size=30

$$\frac{2^x}{b\log(2)} - \frac{a\log(a+b2^x)}{b^2\log(2)}$$

```
[Out] 2^x/(b*Log[2]) - (a*Log[a + 2^x*b])/(b^2*Log[2])
```

Rubi [A] time = 0.0576705, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{2^x}{b\log(2)} - \frac{a\log(a+b2^x)}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/(a + 2^x*b),x]

[Out] 2^x/(b*Log[2]) - (a*Log[a + 2^x*b])/(b^2*Log[2])
```

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

$$-\frac{a\log(2^x b+a)}{b^2\log(2)} + \frac{\int^{2^x} \frac{1}{b} dx}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a+2**x*b),x)

[Out] -a*log(2**x*b + a)/(b**2*log(2)) + Integral(1/b, (x, 2**x))/log(2
)
```

Mathematica [A] time = 0.00762424, size = 28, normalized size = 0.93

$$\frac{b2^x - a\log\left(\frac{b2^x}{a}+1\right)}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/(a + 2^x*b),x]

[Out] (2^x*b - a*Log[1 + (2^x*b)/a])/(b^2*Log[2])
```

Maple [A] time = 0.012, size = 35, normalized size = 1.2

$$\frac{e^{x\ln(2)}}{\ln(2)\,b} - \frac{a\ln\left(a+e^{x\ln(2)}b\right)}{\ln(2)\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a+2^x*b),x)
```

```
[Out] 1/ln(2)/b*exp(x*ln(2))-1/ln(2)/b^2*a*ln(a+exp(x*ln(2))*b)
```

Maxima [A] time = 0.851628, size = 41, normalized size = 1.37

$$\frac{2^x}{b\log(2)} - \frac{a\log(2^x b + a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(2^x*b + a),x, algorithm="maxima")
```

```
[Out] 2^x/(b*log(2)) - a*log(2^x*b + a)/(b^2*log(2))
```

Fricas [A] time = 0.259091, size = 34, normalized size = 1.13

$$\frac{2^x b - a\log(2^x b + a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(2^x*b + a),x, algorithm="fricas")
```

```
[Out] (2^x*b - a*log(2^x*b + a))/(b^2*log(2))
```

Sympy [A] time = 0.169948, size = 31, normalized size = 1.03

$$-\frac{a\log\left(2^x + \frac{a}{b}\right)}{b^2\log(2)} + \begin{cases} \frac{2^x}{b\log(2)} & \text{for } b\log(2) \neq 0 \\ \frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a+2**x*b),x)
```

```
[Out] -a*log(2**x + a/b)/(b**2*log(2)) + Piecewise((2**x/(b*log(2)), Ne
(b*log(2), 0)), (x/b, True))
```

GIAC/XCAS [A] time = 0.240235, size = 42, normalized size = 1.4

$$\frac{2^x}{b\ln(2)} - \frac{a\ln(|2^x b + a|)}{b^2\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(2^x*b + a),x, algorithm="giac")
```

```
[Out] 2^x/(b*ln(2)) - a*ln(abs(2^x*b + a))/(b^2*ln(2))
```

3.475 $\int \frac{4^x}{a-2^x b} \, dx$

Optimal. Leaf size=32

$$-\frac{a \log(a-b2^x)}{b^2 \log(2)}-\frac{2^x}{b \log(2)}$$

```
[Out] -(2^x/(b*Log[2])) - (a*Log[a - 2^x*b])/(b^2*Log[2])
```

Rubi [A] time = 0.0638529, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$-\frac{a \log(a-b2^x)}{b^2 \log(2)}-\frac{2^x}{b \log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[4^x/(a - 2^x*b),x]

[Out] -(2^x/(b*Log[2])) - (a*Log[a - 2^x*b])/(b^2*Log[2])
```

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

$$-\frac{a \log(-2^x b+a)}{b^2 \log(2)}-\frac{\int^{2^x} \frac{1}{b}\, dx}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4**x/(a-2**x*b),x)

[Out] -a*log(-2**x*b + a)/(b**2*log(2)) - Integral(1/b, (x, 2**x))/log(
2)
```

Mathematica [A] time = 0.0325068, size = 29, normalized size = 0.91

$$-\frac{a \log\left(1-\frac{b2^x}{a}\right)+b2^x}{b^2 \log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[4^x/(a - 2^x*b),x]

[Out] -((2^x*b + a*Log[1 - (2^x*b)/a])/(b^2*Log[2]))
```

Maple [A] time = 0.022, size = 37, normalized size = 1.2

$$-\frac{e^{x\ln(2)}}{\ln(2)\, b}-\frac{a \ln\left(a-e^{x\ln(2)}b\right)}{\ln(2)\, b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(4^x/(a-2^x*b),x)
```

```
[Out] -1/ln(2)/b*exp(x*ln(2))-1/ln(2)/b^2*a*ln(a-exp(x*ln(2))*b)
```

Maxima [A] time = 0.841862, size = 45, normalized size = 1.41

$$-\frac{2^x}{b\log(2)} - \frac{a\log(2^x b - a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-4^x/(2^x*b - a),x, algorithm="maxima")
```

```
[Out] -2^x/(b*log(2)) - a*log(2^x*b - a)/(b^2*log(2))
```

Fricas [A] time = 0.255202, size = 36, normalized size = 1.12

$$-\frac{2^x b + a\log(2^x b - a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-4^x/(2^x*b - a),x, algorithm="fricas")
```

```
[Out] -(2^x*b + a*log(2^x*b - a))/(b^2*log(2))
```

Sympy [A] time = 0.1866, size = 34, normalized size = 1.06

$$-\frac{a\log\left(2^x - \frac{a}{b}\right)}{b^2\log(2)} + \begin{cases} -\frac{2^x}{b\log(2)} & \text{for } b\log(2) \neq 0 \\ -\frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4**x/(a-2**x*b),x)
```

```
[Out] -a*log(2**x - a/b)/(b**2*log(2)) + Piecewise((-2**x/(b*log(2)), N
e(b*log(2), 0)), (-x/b, True))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{4^x}{2^x b - a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-4^x/(2^x*b - a),x, algorithm="giac")
```

```
[Out] integrate(-4^x/(2^x*b - a), x)
```

3.476 $\int \frac{2^{2x}}{a-2^x b}\,dx$

Optimal. Leaf size=32

$$-\frac{a\log(a-b2^x)}{b^2\log(2)}-\frac{2^x}{b\log(2)}$$

```
[Out] -(2^x/(b*Log[2])) - (a*Log[a - 2^x*b])/(b^2*Log[2])
```

Rubi [A] time = 0.0605875, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{a\log(a-b2^x)}{b^2\log(2)}-\frac{2^x}{b\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/(a - 2^x*b),x]

[Out] -(2^x/(b*Log[2])) - (a*Log[a - 2^x*b])/(b^2*Log[2])
```

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

$$-\frac{a\log(-2^x b+a)}{b^2\log(2)}-\frac{\int^{2^x}\frac{1}{b}\,dx}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a-2**x*b),x)

[Out] -a*log(-2**x*b + a)/(b**2*log(2)) - Integral(1/b, (x, 2**x))/log(
2)
```

Mathematica [A] time = 0.00929551, size = 29, normalized size = 0.91

$$-\frac{a\log\left(1-\frac{b2^x}{a}\right)+b2^x}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/(a - 2^x*b),x]

[Out] -((2^x*b + a*Log[1 - (2^x*b)/a])/(b^2*Log[2]))
```

Maple [A] time = 0.015, size = 37, normalized size = 1.2

$$-\frac{e^{x\ln(2)}}{\ln(2)\,b}-\frac{a\ln\left(a-e^{x\ln(2)}b\right)}{\ln(2)\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a-2^x*b),x)
```

```
[Out] -1/ln(2)/b*exp(x*ln(2))-1/ln(2)/b^2*a*ln(a-exp(x*ln(2))*b)
```

Maxima [A] time = 0.875119, size = 45, normalized size = 1.41

$$-\frac{2^x}{b\log(2)} - \frac{a\log(2^x b - a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^(2*x)/(2^x*b - a),x, algorithm="maxima")
```

```
[Out] -2^x/(b*log(2)) - a*log(2^x*b - a)/(b^2*log(2))
```

Fricas [A] time = 0.268435, size = 36, normalized size = 1.12

$$-\frac{2^x b + a\log(2^x b - a)}{b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^(2*x)/(2^x*b - a),x, algorithm="fricas")
```

```
[Out] -(2^x*b + a*log(2^x*b - a))/(b^2*log(2))
```

Sympy [A] time = 0.18783, size = 34, normalized size = 1.06

$$-\frac{a\log\left(2^x - \frac{a}{b}\right)}{b^2\log(2)} + \begin{cases} -\frac{2^x}{b\log(2)} & \text{for } b\log(2) \neq 0 \\ -\frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a-2**x*b),x)
```

```
[Out] -a*log(2**x - a/b)/(b**2*log(2)) + Piecewise((-2**x/(b*log(2)), N
e(b*log(2), 0)), (-x/b, True))
```

GIAC/XCAS [A] time = 0.250169, size = 46, normalized size = 1.44

$$-\frac{2^x}{b\ln(2)} - \frac{a\ln(|2^x b - a|)}{b^2\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^(2*x)/(2^x*b - a),x, algorithm="giac")
```

```
[Out] -2^x/(b*ln(2)) - a*ln(abs(2^x*b - a))/(b^2*ln(2))
```

3.477 $\int \frac{4^x}{a+2^{-x}b} dx$

Optimal. Leaf size=58

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a+b2^{-x}\right)}{a^3\log(2)}-\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) - (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a + b/2^x])/(a^3*Log[2])
```

Rubi [A] time = 0.104078, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a+b2^{-x}\right)}{a^3\log(2)}-\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[4^x/(a + b/2^x),x]
```

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) - (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a + b/2^x])/(a^3*Log[2])
```

Rubi in Sympy [A] time = 13.2077, size = 58, normalized size = 1.

$$\frac{2^{2x}}{2a\log(2)}-\frac{2^xb}{a^2\log(2)}-\frac{b^2\log\left(2^{-x}\right)}{a^3\log(2)}+\frac{b^2\log\left(a+2^{-x}b\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4**x/(a+b/(2**x)),x)
```

```
[Out] 2**(2*x)/(2*a*log(2)) - 2**x*b/(a**2*log(2)) - b**2*log(2**(-x))/
(a**3*log(2)) + b**2*log(a + 2**(-x)*b)/(a**3*log(2))
```

Mathematica [A] time = 0.0471937, size = 39, normalized size = 0.67

$$\frac{2b^2\log\left(\frac{a2^x}{b}+1\right)+a2^x\left(a2^x-2b\right)}{a^3\log(4)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[4^x/(a + b/2^x),x]
```

```
[Out] (2^x*a*(2^x*a - 2*b) + 2*b^2*Log[1 + (2^x*a)/b])/(a^3*Log[4])
```

Maple [A] time = 0.023, size = 54, normalized size = 0.9

$$\frac{\left(e^{x\ln(2)}\right)^2}{2\,a\ln(2)}-\frac{e^{x\ln(2)}b}{\ln(2)\,a^2}+\frac{b^2\ln\left(ae^{x\ln(2)}+b\right)}{a^3\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(4^x/(a+b/(2^x)),x)
```

```
[Out] 1/2/a/ln(2)*exp(x*ln(2))^2-1/a^2/ln(2)*b*exp(x*ln(2))+1/a^3/ln(2)
*b^2*ln(a*exp(x*ln(2))+b)
```

Maxima [A] time = 0.843163, size = 80, normalized size = 1.38

$$\frac{b^2x}{a^3} - \frac{\left(2^{-x+1}b - a\right)2^{2x-1}}{a^2\log(2)} + \frac{b^2\log\left(a + \frac{b}{2^x}\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/(a + b/2^x),x, algorithm="maxima")
```

```
[Out] b^2*x/a^3 - (2^(-x + 1)*b - a)*2^(2*x - 1)/(a^2*log(2)) + b^2*log
(a + b/2^x)/(a^3*log(2))
```

Fricas [A] time = 0.247459, size = 53, normalized size = 0.91

$$\frac{2^{2x}a^2 - 2\cdot 2^x ab + 2b^2\log(2^x a + b)}{2a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/(a + b/2^x),x, algorithm="fricas")
```

```
[Out] 1/2*(2^(2*x)*a^2 - 2*2^x*a*b + 2*b^2*log(2^x*a + b))/(a^3*log(2))
```

Sympy [A] time = 0.68436, size = 92, normalized size = 1.59

$$\begin{cases} \frac{2^{2x}a^2\log(2) - 2\cdot 2^x ab\log(2)}{2a^3\log(2)^2} & \text{for } 2a^3\log(2)^2 \neq 0 \\ x\left(-\frac{b^2}{a^3} + \frac{a^2 - ab + b^2}{a^3}\right) & \text{otherwise} \end{cases} + \frac{b^2x}{a^3} + \frac{b^2\log\left(\frac{a}{b} + 2^{-x}\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4**x/(a+b/(2**x)),x)
```

```
[Out] Piecewise(((2**(2*x)*a**2*log(2) - 2*2**x*a*b*log(2))/(2*a**3*log
(2)**2), Ne(2*a**3*log(2)**2, 0)), (x*(-b**2/a**3 + (a**2 - a*b +
 b**2)/a**3), True)) + b**2*x/a**3 + b**2*log(a/b + 2**(-x))/(a**
3*log(2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x}{a + \frac{b}{2^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/(a + b/2^x),x, algorithm="giac")

[Out] integrate(4^x/(a + b/2^x), x)
```

3.478 $\int \frac{2^{2x}}{a+2^{-x}b}\,dx$

Optimal. Leaf size=58

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a+b2^{-x}\right)}{a^3\log(2)}-\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) - (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a + b/2^x])/(a^3*Log[2])
```

Rubi [A] time = 0.091064, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a+b2^{-x}\right)}{a^3\log(2)}-\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In] Int[2^(2*x)/(a + b/2^x),x]
```

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) - (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a + b/2^x])/(a^3*Log[2])
```

Rubi in Sympy [A] time = 13.1381, size = 58, normalized size = 1.

$$\frac{2^{2x}}{2a\log(2)}-\frac{2^xb}{a^2\log(2)}-\frac{b^2\log\left(2^{-x}\right)}{a^3\log(2)}+\frac{b^2\log\left(a+2^{-x}b\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(2**(2*x)/(a+b/(2**x)),x)
```

```
[Out] 2**(2*x)/(2*a*log(2)) - 2**x*b/(a**2*log(2)) - b**2*log(2**(-x))/
(a**3*log(2)) + b**2*log(a + 2**(-x)*b)/(a**3*log(2))
```

Mathematica [A] time = 0.00961037, size = 39, normalized size = 0.67

$$\frac{2b^2\log\left(\frac{a2^x}{b}+1\right)+a2^x\left(a2^x-2b\right)}{a^3\log(4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[2^(2*x)/(a + b/2^x),x]
```

```
[Out] (2^x*a*(2^x*a - 2*b) + 2*b^2*Log[1 + (2^x*a)/b])/(a^3*Log[4])
```

Maple [A] time = 0.016, size = 54, normalized size = 0.9

$$\frac{\left(e^{x\ln(2)}\right)^2}{2\,a\ln(2)}-\frac{e^{x\ln(2)}b}{\ln(2)\,a^2}+\frac{b^2\ln\left(ae^{x\ln(2)}+b\right)}{a^3\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a+b/(2^x)),x)
```

```
[Out] 1/2/a/ln(2)*exp(x*ln(2))^2-1/a^2/ln(2)*b*exp(x*ln(2))+1/a^3/ln(2)
*b^2*ln(a*exp(x*ln(2))+b)
```

Maxima [A] time = 0.755547, size = 80, normalized size = 1.38

$$\frac{b^2x}{a^3} - \frac{\left(2^{-x+1}b - a\right)2^{2x-1}}{a^2\log(2)} + \frac{b^2\log\left(a + \frac{b}{2^x}\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(a + b/2^x),x, algorithm="maxima")
```

```
[Out] b^2*x/a^3 - (2^(-x + 1)*b - a)*2^(2*x - 1)/(a^2*log(2)) + b^2*log
(a + b/2^x)/(a^3*log(2))
```

Fricas [A] time = 0.265719, size = 53, normalized size = 0.91

$$\frac{2^{2x}a^2 - 2\cdot 2^x ab + 2b^2\log(2^x a + b)}{2a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(a + b/2^x),x, algorithm="fricas")
```

```
[Out] 1/2*(2^(2*x)*a^2 - 2*2^x*a*b + 2*b^2*log(2^x*a + b))/(a^3*log(2))
```

Sympy [A] time = 0.266884, size = 92, normalized size = 1.59

$$\begin{cases} \frac{2^{2x}a^2\log(2) - 2\cdot 2^x ab\log(2)}{2a^3\log(2)^2} & \text{for}\ 2a^3\log(2)^2 \neq 0 \\ x\left(-\frac{b^2}{a^3} + \frac{a^2 - ab + b^2}{a^3}\right) & \text{otherwise} \end{cases} + \frac{b^2x}{a^3} + \frac{b^2\log\left(\frac{a}{b} + 2^{-x}\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a+b/(2**x)),x)
```

```
[Out] Piecewise(((2**(2*x)*a**2*log(2) - 2*2**x*a*b*log(2))/(2*a**3*log
(2)**2), Ne(2*a**3*log(2)**2, 0)), (x*(-b**2/a**3 + (a**2 - a*b +
 b**2)/a**3), True)) + b**2*x/a**3 + b**2*log(a/b + 2**(-x))/(a**
3*log(2))
```

GIAC/XCAS [A] time = 0.23239, size = 65, normalized size = 1.12

$$\frac{b^2\ln(|2^x a + b|)}{a^3\ln(2)} + \frac{2^{2x}a\ln(2) - 2\cdot 2^x b\ln(2)}{2a^2\ln(2)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(a + b/2^x),x, algorithm="giac")
```

```
[Out] b^2*ln(abs(2^x*a + b))/(a^3*ln(2)) + 1/2*(2^(2*x)*a*ln(2) - 2*2^x
*b*ln(2))/(a^2*ln(2)^2)
```

3.479 $\int \frac{4^x}{a-2^{-x}b}\,dx$

Optimal. Leaf size=58

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a-b2^{-x}\right)}{a^3\log(2)}+\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) + (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a - b/2^x])/(a^3*Log[2])
```

Rubi [A] time = 0.0963789, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a-b2^{-x}\right)}{a^3\log(2)}+\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In] Int[4^x/(a - b/2^x),x]
```

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) + (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a - b/2^x])/(a^3*Log[2])
```

Rubi in Sympy [A] time = 13.5821, size = 58, normalized size = 1.

$$\frac{2^{2x}}{2a\log(2)}+\frac{2^xb}{a^2\log(2)}-\frac{b^2\log\left(2^{-x}\right)}{a^3\log(2)}+\frac{b^2\log\left(a-2^{-x}b\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(4**x/(a-b/(2**x)),x)
```

```
[Out] 2**(2*x)/(2*a*log(2)) + 2**x*b/(a**2*log(2)) - b**2*log(2**(-x))/
(a**3*log(2)) + b**2*log(a - 2**(-x)*b)/(a**3*log(2))
```

Mathematica [A] time = 0.0461032, size = 40, normalized size = 0.69

$$\frac{2b^2\log\left(1-\frac{a2^x}{b}\right)+a2^x\left(a2^x+2b\right)}{a^3\log(4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[4^x/(a - b/2^x),x]
```

```
[Out] (2^x*a*(2^x*a + 2*b) + 2*b^2*Log[1 - (2^x*a)/b])/(a^3*Log[4])
```

Maple [A] time = 0.016, size = 55, normalized size = 1.

$$\frac{e^{x\ln(2)}b}{\ln(2)\,a^2}+\frac{\left(e^{x\ln(2)}\right)^2}{2\,a\ln(2)}+\frac{b^2\ln\left(ae^{x\ln(2)}-b\right)}{a^3\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(4^x/(a-b/(2^x)),x)
```

```
[Out] 1/a^2/ln(2)*b*exp(x*ln(2))+1/2/a/ln(2)*exp(x*ln(2))^2+1/a^3/ln(2)
*b^2*ln(a*exp(x*ln(2))-b)
```

Maxima [A]   time = 0.873051, size = 78, normalized size = 1.34

$$\frac{b^2x}{a^3}+\frac{\left(2^{-x+1}b+a\right)2^{2\,x-1}}{a^2\log\left(2\right)}+\frac{b^2\log\left(-a+\frac{b}{2^x}\right)}{a^3\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(4^x/(a - b/2^x),x, algorithm="maxima")
```

```
[Out] b^2*x/a^3 + (2^(-x + 1)*b + a)*2^(2*x - 1)/(a^2*log(2)) + b^2*log
(-a + b/2^x)/(a^3*log(2))
```

Fricas [A]   time = 0.255121, size = 55, normalized size = 0.95

$$\frac{2^{2\,x}a^2+2\cdot 2^xab+2\,b^2\log\left(2^xa-b\right)}{2\,a^3\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(4^x/(a - b/2^x),x, algorithm="fricas")
```

```
[Out] 1/2*(2^(2*x)*a^2 + 2*2^x*a*b + 2*b^2*log(2^x*a - b))/(a^3*log(2))
```

Sympy [A]   time = 0.700311, size = 92, normalized size = 1.59

$$\begin{cases}\frac{2^{2x}a^2\log\left(2\right)+2\cdot 2^xab\log\left(2\right)}{2a^3\log\left(2\right)^2} & \text{for } 2a^3\log\left(2\right)^2\neq 0\\ x\left(-\frac{b^2}{a^3}+\frac{a^2+ab+b^2}{a^3}\right) & \text{otherwise}\end{cases}+\frac{b^2x}{a^3}+\frac{b^2\log\left(-\frac{a}{b}+2^{-x}\right)}{a^3\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(4**x/(a-b/(2**x)),x)
```

```
[Out] Piecewise(((2**(2*x)*a**2*log(2) + 2*2**x*a*b*log(2))/(2*a**3*log
(2)**2), Ne(2*a**3*log(2)**2, 0)), (x*(-b**2/a**3 + (a**2 + a*b +
 b**2)/a**3), True)) + b**2*x/a**3 + b**2*log(-a/b + 2**(-x))/(a*
*3*log(2))
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int\frac{4^x}{a-\frac{b}{2^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/(a - b/2^x),x, algorithm="giac")

[Out] integrate(4^x/(a - b/2^x), x)
```

3.480 $\int \frac{2^{2x}}{a-2^{-x}b}\,dx$

Optimal. Leaf size=58

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a-b2^{-x}\right)}{a^3\log(2)}+\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) + (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a - b/2^x])/(a^3*Log[2])
```

Rubi [A] time = 0.0941272, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{b^2x}{a^3}+\frac{b^2\log\left(a-b2^{-x}\right)}{a^3\log(2)}+\frac{b2^x}{a^2\log(2)}+\frac{2^{2x-1}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/(a - b/2^x),x]
```

```
[Out] (b^2*x)/a^3 + 2^(-1 + 2*x)/(a*Log[2]) + (2^x*b)/(a^2*Log[2]) + (b
^2*Log[a - b/2^x])/(a^3*Log[2])
```

Rubi in Sympy [A] time = 13.5538, size = 58, normalized size = 1.

$$\frac{2^{2x}}{2a\log(2)}+\frac{2^xb}{a^2\log(2)}-\frac{b^2\log\left(2^{-x}\right)}{a^3\log(2)}+\frac{b^2\log\left(a-2^{-x}b\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a-b/(2**x)),x)
```

```
[Out] 2**(2*x)/(2*a*log(2)) + 2**x*b/(a**2*log(2)) - b**2*log(2**(-x))/
(a**3*log(2)) + b**2*log(a - 2**(-x)*b)/(a**3*log(2))
```

Mathematica [A] time = 0.010506, size = 40, normalized size = 0.69

$$\frac{2b^2\log\left(1-\frac{a2^x}{b}\right)+a2^x\left(a2^x+2b\right)}{a^3\log(4)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/(a - b/2^x),x]
```

```
[Out] (2^x*a*(2^x*a + 2*b) + 2*b^2*Log[1 - (2^x*a)/b])/(a^3*Log[4])
```

Maple [A] time = 0.014, size = 55, normalized size = 1.

$$\frac{e^{x\ln(2)}b}{\ln(2)\,a^2}+\frac{\left(e^{x\ln(2)}\right)^2}{2\,a\ln(2)}+\frac{b^2\ln\left(ae^{x\ln(2)}-b\right)}{a^3\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(2^(2*x)/(a-b/(2^x)),x)
```

```
[Out] 1/a^2/ln(2)*b*exp(x*ln(2))+1/2/a/ln(2)*exp(x*ln(2))^2+1/a^3/ln(2)
*b^2*ln(a*exp(x*ln(2))-b)
```

Maxima [A] time = 0.755639, size = 78, normalized size = 1.34

$$\frac{b^2x}{a^3} + \frac{\left(2^{-x+1}b + a\right)2^{2x-1}}{a^2\log(2)} + \frac{b^2\log\left(-a + \frac{b}{2^x}\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(2^(2*x)/(a - b/2^x),x, algorithm="maxima")
```

```
[Out] b^2*x/a^3 + (2^(-x + 1)*b + a)*2^(2*x - 1)/(a^2*log(2)) + b^2*log
(-a + b/2^x)/(a^3*log(2))
```

Fricas [A] time = 0.254125, size = 55, normalized size = 0.95

$$\frac{2^{2x}a^2 + 2\cdot 2^x ab + 2b^2\log\left(2^xa - b\right)}{2a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(2^(2*x)/(a - b/2^x),x, algorithm="fricas")
```

```
[Out] 1/2*(2^(2*x)*a^2 + 2*2^x*a*b + 2*b^2*log(2^x*a - b))/(a^3*log(2))
```

Sympy [A] time = 0.272617, size = 92, normalized size = 1.59

$$\begin{cases} \frac{2^{2x}a^2\log(2)+2\cdot 2^x ab\log(2)}{2a^3\log(2)^2} & \text{for}\ 2a^3\log(2)^2 \neq 0 \\ x\left(-\frac{b^2}{a^3} + \frac{a^2+ab+b^2}{a^3}\right) & \text{otherwise} \end{cases} + \frac{b^2x}{a^3} + \frac{b^2\log\left(-\frac{a}{b} + 2^{-x}\right)}{a^3\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(2**(2*x)/(a-b/(2**x)),x)
```

```
[Out] Piecewise(((2**(2*x)*a**2*log(2) + 2*2**x*a*b*log(2))/(2*a**3*log
(2)**2), Ne(2*a**3*log(2)**2, 0)), (x*(-b**2/a**3 + (a**2 + a*b +
 b**2)/a**3), True)) + b**2*x/a**3 + b**2*log(-a/b + 2**(-x))/(a*
*3*log(2))
```

GIAC/XCAS [A] time = 0.228502, size = 68, normalized size = 1.17

$$\frac{b^2\ln\left(|2^xa - b|\right)}{a^3\ln(2)} + \frac{2^{2x}a\ln(2) + 2\cdot 2^xb\ln(2)}{2a^2\ln(2)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/(a - b/2^x),x, algorithm="giac")
```

```
[Out] b^2*ln(abs(2^x*a - b))/(a^3*ln(2)) + 1/2*(2^(2*x)*a*ln(2) + 2*2^x
*b*ln(2))/(a^2*ln(2)^2)
```

3.481 $\int \frac{2^x}{a+4^x b} \, dx$

Optimal. Leaf size=30

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0546934, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

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

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 7.45293, size = 27, normalized size = 0.9

$$\frac{\operatorname{atan}\left(\frac{2^x\sqrt{b}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+4**x*b),x)
```

```
[Out] atan(2**x*sqrt(b)/sqrt(a))/(sqrt(a)*sqrt(b)*log(2))
```

Mathematica [A] time = 0.0120781, size = 30, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

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

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Maple [B] time = 0.041, size = 53, normalized size = 1.8

$$-\frac{1}{2\ln(2)}\ln\left(2^x - a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}} + \frac{1}{2\ln(2)}\ln\left(2^x + a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.277725, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\cdot 2^{x}ab+\left(2^{2x}b-a\right)\sqrt{-ab}}{2^{2x}b+a}\right)}{2\sqrt{-ab}\log\left(2\right)}, -\frac{\arctan\left(\frac{a}{\sqrt{ab}2^{x}}\right)}{\sqrt{ab}\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [1/2*log((2*2^x*a*b + (2^(2*x)*b - a)*sqrt(-a*b))/(2^(2*x)*b + a)
)/(sqrt(-a*b)*log(2)), -arctan(a/(sqrt(a*b)*2^x))/(sqrt(a*b)*log(
2))]
```

Sympy [A] time = 0.200542, size = 24, normalized size = 0.8

$$\frac{\operatorname{RootSum}\left(4z^{2}ab+1,\left(i\mapsto i\log\left(2^{x}+2ia\right)\right)\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+4**x*b),x)
```

```
[Out] RootSum(4*_z**2*a*b + 1, Lambda(_i, _i*log(2**x + 2*_i*a)))/log(2
)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2^{x}}{4^{x}b+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(2^x/(4^x*b + a), x)
```

3.482 $\int \frac{2^x}{a+2^{2x}b} \, dx$

Optimal. Leaf size=30

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0480266, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a + 2^(2*x)*b),x]
```

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 7.9819, size = 27, normalized size = 0.9

$$\frac{\operatorname{atan}\left(\frac{2^x\sqrt{b}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+2**(2*x)*b),x)
```

```
[Out] atan(2**x*sqrt(b)/sqrt(a))/(sqrt(a)*sqrt(b)*log(2))
```

Mathematica [A] time = 0.00686844, size = 30, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/(a + 2^(2*x)*b),x]
```

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Maple [B] time = 0.039, size = 53, normalized size = 1.8

$$-\frac{1}{2\ln(2)}\ln\left(2^x - a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}} + \frac{1}{2\ln(2)}\ln\left(2^x + a\frac{1}{\sqrt{-ab}}\right)\frac{1}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+2^(2*x)*b),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(2^(2*x)*b + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.257363, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\cdot 2^{x}ab+\left(2^{2\,x}b-a\right)\sqrt{-ab}}{2^{2\,x}b+a}\right)}{2\,\sqrt{-ab}\log\left(2\right)}, -\frac{\arctan\left(\frac{a}{\sqrt{ab}2^{x}}\right)}{\sqrt{ab}\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(2^(2*x)*b + a),x, algorithm="fricas")
```

```
[Out] [1/2*log((2*2^x*a*b + (2^(2*x)*b - a)*sqrt(-a*b))/(2^(2*x)*b + a)
)/(sqrt(-a*b)*log(2)), -arctan(a/(sqrt(a*b)*2^x))/(sqrt(a*b)*log(
2))]
```

Sympy [A] time = 0.203482, size = 24, normalized size = 0.8

$$\frac{\operatorname{RootSum}\left(4z^{2}ab+1,\left(i\mapsto i\log\left(2^{x}+2ia\right)\right)\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+2**(2*x)*b),x)
```

```
[Out] RootSum(4*_z**2*a*b + 1, Lambda(_i, _i*log(2**x + 2*_i*a)))/log(2
)
```

GIAC/XCAS [A] time = 0.228125, size = 28, normalized size = 0.93

$$\frac{\arctan\left(\frac{2^{x}b}{\sqrt{ab}}\right)}{\sqrt{ab}\ln\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(2^(2*x)*b + a),x, algorithm="giac")
```

```
[Out] arctan(2^x*b/sqrt(a*b))/(sqrt(a*b)*ln(2))
```

3.483 $\int \frac{2^x}{a-4^x b} \, dx$

Optimal. Leaf size=30

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

```
[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0495007, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a - 4^x*b),x]
```

```
[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 8.05955, size = 27, normalized size = 0.9

$$\frac{\operatorname{atanh}\left(\frac{2^x\sqrt{b}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-4**x*b),x)
```

```
[Out] atanh(2**x*sqrt(b)/sqrt(a))/(sqrt(a)*sqrt(b)*log(2))
```

Mathematica [A] time = 0.0101467, size = 30, normalized size = 1.

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/(a - 4^x*b),x]
```

```
[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Maple [B] time = 0.039, size = 49, normalized size = 1.6

$$\frac{1}{2\ln(2)}\ln\left(2^x+a\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}-\frac{1}{2\ln(2)}\ln\left(2^x-a\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-4^x*b),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^x/(4^x*b - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.271095, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\cdot 2^{x}ab+\left(2^{2x}b+a\right)\sqrt{ab}}{2^{2x}b-a}\right)}{2\sqrt{ab}\log(2)}, -\frac{\arctan\left(\frac{a}{\sqrt{-ab}2^{x}}\right)}{\sqrt{-ab}\log(2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^x/(4^x*b - a),x, algorithm="fricas")
```

```
[Out] [1/2*log((2*2^x*a*b + (2^(2*x)*b + a)*sqrt(a*b))/(2^(2*x)*b - a))
/(sqrt(a*b)*log(2)), -arctan(a/(sqrt(-a*b)*2^x))/(sqrt(-a*b)*log(
2))]
```

Sympy [A] time = 0.220376, size = 24, normalized size = 0.8

$$\frac{\operatorname{RootSum}\left(4z^{2}ab-1,\left(i\mapsto i\log\left(2^{x}+2ia\right)\right)\right)}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-4**x*b),x)
```

```
[Out] RootSum(4*_z**2*a*b - 1, Lambda(_i, _i*log(2**x + 2*_i*a)))/log(2
)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{2^{x}}{4^{x}b-a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^x/(4^x*b - a),x, algorithm="giac")
```

```
[Out] integrate(-2^x/(4^x*b - a), x)
```

3.484 $\int \frac{2^x}{a-2^{2x}b}\,dx$

Optimal. Leaf size=30

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

```
[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0510206, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a - 2^(2*x)*b),x]

[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 8.54528, size = 27, normalized size = 0.9

$$\frac{\operatorname{atanh}\left(\frac{2^x\sqrt{b}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-2**(2*x)*b),x)

[Out] atanh(2**x*sqrt(b)/sqrt(a))/(sqrt(a)*sqrt(b)*log(2))
```

Mathematica [A] time = 0.00794742, size = 30, normalized size = 1.

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/(a - 2^(2*x)*b),x]

[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a]]/(Sqrt[a]*Sqrt[b]*Log[2])
```

Maple [B] time = 0.032, size = 49, normalized size = 1.6

$$\frac{1}{2\ln(2)}\ln\left(2^x+a\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}-\frac{1}{2\ln(2)}\ln\left(2^x-a\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-2^(2*x)*b),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^x/(2^(2*x)*b - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.276278, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\cdot 2^{x}ab+\left(2^{2x}b+a\right)\sqrt{ab}}{2^{2x}b-a}\right)}{2\sqrt{ab}\log\left(2\right)}, -\frac{\arctan\left(\frac{a}{\sqrt{-ab}2^{x}}\right)}{\sqrt{-ab}\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^x/(2^(2*x)*b - a),x, algorithm="fricas")
```

```
[Out] [1/2*log((2*2^x*a*b + (2^(2*x)*b + a)*sqrt(a*b))/(2^(2*x)*b - a))
/(sqrt(a*b)*log(2)), -arctan(a/(sqrt(-a*b)*2^x))/(sqrt(-a*b)*log(
2))]
```

Sympy [A] time = 0.222717, size = 24, normalized size = 0.8

$$\frac{\operatorname{RootSum}\left(4z^{2}ab-1,\left(i\mapsto i\log\left(2^{x}+2ia\right)\right)\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-2**(2*x)*b),x)
```

```
[Out] RootSum(4*_z**2*a*b - 1, Lambda(_i, _i*log(2**x + 2*_i*a)))/log(2
)
```

GIAC/XCAS [A] time = 0.247304, size = 32, normalized size = 1.07

$$-\frac{\arctan\left(\frac{2^{x}b}{\sqrt{-ab}}\right)}{\sqrt{-ab}\ln\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2^x/(2^(2*x)*b - a),x, algorithm="giac")
```

```
[Out] -arctan(2^x*b/sqrt(-a*b))/(sqrt(-a*b)*ln(2))
```

3.485 $\int \frac{2^x}{a+4^{-x}b}\,dx$

Optimal. Leaf size=43

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\tan^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTan[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2)
*Log[2])
```

Rubi [A] time = 0.0763111, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\tan^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a + b/4^x),x]
```

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTan[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2)
*Log[2])
```

Rubi in Sympy [A] time = 11.4097, size = 36, normalized size = 0.84

$$\frac{2^x}{a\log{(2)}}-\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{2^x\sqrt{a}}{\sqrt{b}}\right)}{a^{\frac{3}{2}}\log{(2)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+b/(4**x)),x)
```

```
[Out] 2**x/(a*log(2)) - sqrt(b)*atan(2**x*sqrt(a)/sqrt(b))/(a**(3/2)*lo
g(2))
```

Mathematica [C] time = 0.0339928, size = 36, normalized size = 0.84

$$\frac{8^x\text{Hypergeometric2F1}\left(1,\frac{\log(8)}{\log(4)},\frac{\log(32)}{\log(4)},-\frac{a4^x}{b}\right)}{b\log(8)}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[2^x/(a + b/4^x),x]
```

```
[Out] (8^x*Hypergeometric2F1[1, Log[8]/Log[4], Log[32]/Log[4], -((4^x*a
)/b)])/(b*Log[8])
```

Maple [B] time = 0.045, size = 74, normalized size = 1.7

$$\frac{2^x}{a\ln{(2)}}+\frac{1}{2\,a^2\ln{(2)}}\sqrt{-ab}\ln\left(2^x-\frac{1}{a}\sqrt{-ab}\right)-\frac{1}{2\,a^2\ln{(2)}}\sqrt{-ab}\ln\left(2^x+\frac{1}{a}\sqrt{-ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+b/(4^x)),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a + b/4^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.265477, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-\frac{b}{a}}\log\left(-\frac{2\cdot 2^{x}a\sqrt{-\frac{b}{a}}-2^{2\,x}a+b}{2^{2\,x}a+b}\right)+2\cdot 2^{x}}{2\,a\log\left(2\right)},\,-\frac{\sqrt{\frac{b}{a}}\arctan\left(\frac{2^{x}}{\sqrt{\frac{b}{a}}}\right)-2^{x}}{a\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a + b/4^x),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(-b/a)*log(-(2*2^x*a*sqrt(-b/a) - 2^(2*x)*a + b)/(2^(2*
x)*a + b)) + 2*2^x)/(a*log(2)), -(sqrt(b/a)*arctan(2^x/sqrt(b/a))
 - 2^x)/(a*log(2))]
```

Sympy [A] time = 0.250115, size = 39, normalized size = 0.91

$$\begin{cases}\frac{2^{x}}{a\log\left(2\right)} & \text{for}\: a\log\left(2\right)\neq 0\\ \frac{x}{a} & \text{otherwise}\end{cases}+\frac{\operatorname{RootSum}\left(4z^{2}a^{3}+b,\left(i\mapsto i\log\left(2^{x}-2ia\right)\right)\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+b/(4**x)),x)
```

```
[Out] Piecewise((2**x/(a*log(2)), Ne(a*log(2), 0)), (x/a, True)) + Root
Sum(4*_z**2*a**3 + b, Lambda(_i, _i*log(2**x - 2*_i*a)))/log(2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{2^{x}}{a+\frac{b}{4^{x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a + b/4^x),x, algorithm="giac")
```

```
[Out] integrate(2^x/(a + b/4^x), x)
```

3.486 $\int \frac{2^x}{a+2^{-2x}b}\,dx$

Optimal. Leaf size=43

$$\frac{2^x}{a\log(2)} - \frac{\sqrt{b}\tan^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTan[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2)
*Log[2])
```

Rubi [A] time = 0.0725571, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{2^x}{a\log(2)} - \frac{\sqrt{b}\tan^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a + b/2^(2*x)),x]

[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTan[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2)
*Log[2])
```

Rubi in Sympy [A] time = 11.7004, size = 36, normalized size = 0.84

$$\frac{2^x}{a\log(2)} - \frac{\sqrt{b}\,\text{atan}\left(\frac{2^x\sqrt{a}}{\sqrt{b}}\right)}{a^{\frac{3}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+b/(2**(2*x))),x)

[Out] 2**x/(a*log(2)) - sqrt(b)*atan(2**x*sqrt(a)/sqrt(b))/(a**(3/2)*lo
g(2))
```

Mathematica [C] time = 0.0166874, size = 36, normalized size = 0.84

$$\frac{8^x\text{Hypergeometric2F1}\left(1,\frac{\log(8)}{\log(4)},\frac{\log(32)}{\log(4)},-\frac{a4^x}{b}\right)}{b\log(8)}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[2^x/(a + b/2^(2*x)),x]

[Out] (8^x*Hypergeometric2F1[1, Log[8]/Log[4], Log[32]/Log[4], -((4^x*a
)/b)])/(b*Log[8])
```

Maple [B] time = 0.034, size = 74, normalized size = 1.7

$$\frac{2^x}{a\ln(2)} + \frac{1}{2a^2\ln(2)}\sqrt{-ab}\ln\left(2^x - \frac{1}{a}\sqrt{-ab}\right) - \frac{1}{2a^2\ln(2)}\sqrt{-ab}\ln\left(2^x + \frac{1}{a}\sqrt{-ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+b/(2^(2*x))),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a + b/2^(2*x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.26138, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-\frac{b}{a}}\log\left(-\frac{2\cdot 2^{x} a\sqrt{-\frac{b}{a}}-2^{2\,x} a+b}{2^{2\,x} a+b}\right)+2\cdot 2^{x}}{2\,a\log\left(2\right)}, -\frac{\sqrt{\frac{b}{a}}\arctan\left(\frac{2^{x}}{\sqrt{\frac{b}{a}}}\right)-2^{x}}{a\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a + b/2^(2*x)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(-b/a)*log(-(2*2^x*a*sqrt(-b/a) - 2^(2*x)*a + b)/(2^(2*
x)*a + b)) + 2*2^x)/(a*log(2)), -(sqrt(b/a)*arctan(2^x/sqrt(b/a))
 - 2^x)/(a*log(2))]
```

Sympy [A] time = 0.278678, size = 44, normalized size = 1.02

$$\begin{cases} \frac{2^{x}}{a\log\left(2\right)} & \text{for}\: a\log\left(2\right) \neq 0 \\ \frac{x}{a} & \text{otherwise} \end{cases} + \frac{\operatorname{RootSum}{\left(4 z^{2} a^{3} + b, \left(i \mapsto i \log{\left(\frac{2 i a^{2}}{b} + 2^{- x} \right)} \right)\right)}}{\log{\left(2 \right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+b/(2**(2*x))),x)
```

```
[Out] Piecewise((2**x/(a*log(2)), Ne(a*log(2), 0)), (x/a, True)) + Root
Sum(4*_z**2*a**3 + b, Lambda(_i, _i*log(2*_i*a**2/b + 2**(-x))))/
log(2)
```

GIAC/XCAS [A] time = 0.243639, size = 51, normalized size = 1.19

$$-\frac{b\arctan\left(\frac{2^{x} a}{\sqrt{ab}}\right)}{\sqrt{ab}a\ln\left(2\right)} + \frac{2^{x}}{a\ln\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a + b/2^(2*x)),x, algorithm="giac")
```

```
[Out] -b*arctan(2^x*a/sqrt(a*b))/(sqrt(a*b)*a*ln(2)) + 2^x/(a*ln(2))
```

3.487 $\int \frac{2^x}{a-4^{-x}b}\,dx$

Optimal. Leaf size=43

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTanh[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2
)*Log[2])
```

Rubi [A] time = 0.076921, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a - b/4^x),x]
```

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTanh[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2
)*Log[2])
```

Rubi in Sympy [A] time = 12.5044, size = 36, normalized size = 0.84

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\,\mathrm{atanh}\left(\frac{2^x\sqrt{a}}{\sqrt{b}}\right)}{a^{\frac{3}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-b/(4**x)),x)
```

```
[Out] 2**x/(a*log(2)) - sqrt(b)*atanh(2**x*sqrt(a)/sqrt(b))/(a**(3/2)*l
og(2))
```

Mathematica [C] time = 0.0329019, size = 36, normalized size = 0.84

$$-\frac{8^x\text{Hypergeometric2F1}\left(1,\frac{\log(8)}{\log(4)},\frac{\log(32)}{\log(4)},\frac{a4^x}{b}\right)}{b\log(8)}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[2^x/(a - b/4^x),x]
```

```
[Out] -((8^x*Hypergeometric2F1[1, Log[8]/Log[4], Log[32]/Log[4], (4^x*a
)/b])/(b*Log[8]))
```

Maple [A] time = 0.042, size = 70, normalized size = 1.6

$$\frac{2^x}{a\ln(2)}+\frac{1}{2\,a^2\ln(2)}\sqrt{ab}\ln\left(2^x-\frac{1}{a}\sqrt{ab}\right)-\frac{1}{2\,a^2\ln(2)}\sqrt{ab}\ln\left(2^x+\frac{1}{a}\sqrt{ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-b/(4^x)),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a - b/4^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.272439, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{\frac{b}{a}}\log\left(-\frac{2\cdot 2^{x}a\sqrt{\frac{b}{a}}-2^{2x}a-b}{2^{2x}a-b}\right)+2\cdot 2^{x}}{2\,a\log(2)}, -\frac{\sqrt{-\frac{b}{a}}\arctan\left(\frac{2^{x}}{\sqrt{-\frac{b}{a}}}\right)-2^{x}}{a\log(2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a - b/4^x),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b/a)*log(-(2*2^x*a*sqrt(b/a) - 2^(2*x)*a - b)/(2^(2*x)
*a - b)) + 2*2^x)/(a*log(2)), -(sqrt(-b/a)*arctan(2^x/sqrt(-b/a))
 - 2^x)/(a*log(2))]
```

Sympy [A] time = 0.259781, size = 39, normalized size = 0.91

$$\begin{cases}\frac{2^{x}}{a\log(2)} & \text{for}\ a\log(2)\neq 0\\ \frac{x}{a} & \text{otherwise}\end{cases}+\frac{\operatorname{RootSum}\left(4z^{2}a^{3}-b,\left(i\mapsto i\log\left(2^{x}-2ia\right)\right)\right)}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-b/(4**x)),x)
```

```
[Out] Piecewise((2**x/(a*log(2)), Ne(a*log(2), 0)), (x/a, True)) + Root
Sum(4*_z**2*a**3 - b, Lambda(_i, _i*log(2**x - 2*_i*a)))/log(2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{2^{x}}{a-\frac{b}{4^{x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a - b/4^x),x, algorithm="giac")

[Out] integrate(2^x/(a - b/4^x), x)
```

3.488 $\int \frac{2^x}{a-2^{-2x}b}\,dx$

Optimal. Leaf size=43

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTanh[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2
)*Log[2])
```

Rubi [A] time = 0.0781837, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{a}2^x}{\sqrt{b}}\right)}{a^{3/2}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/(a - b/2^(2*x)),x]
```

```
[Out] 2^x/(a*Log[2]) - (Sqrt[b]*ArcTanh[(2^x*Sqrt[a])/Sqrt[b]])/(a^(3/2
)*Log[2])
```

Rubi in Sympy [A] time = 12.814, size = 36, normalized size = 0.84

$$\frac{2^x}{a\log(2)}-\frac{\sqrt{b}\,\operatorname{atanh}\left(\frac{2^x\sqrt{a}}{\sqrt{b}}\right)}{a^{\frac{3}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-b/(2**(2*x))),x)
```

```
[Out] 2**x/(a*log(2)) - sqrt(b)*atanh(2**x*sqrt(a)/sqrt(b))/(a**(3/2)*l
og(2))
```

Mathematica [C] time = 0.0131561, size = 36, normalized size = 0.84

$$-\frac{8^x\text{Hypergeometric2F1}\left(1,\frac{\log(8)}{\log(4)},\frac{\log(32)}{\log(4)},\frac{a4^x}{b}\right)}{b\log(8)}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[2^x/(a - b/2^(2*x)),x]
```

```
[Out] -((8^x*Hypergeometric2F1[1, Log[8]/Log[4], Log[32]/Log[4], (4^x*a
)/b])/(b*Log[8]))
```

Maple [A] time = 0.036, size = 70, normalized size = 1.6

$$\frac{2^x}{a\ln(2)}+\frac{1}{2\,a^2\ln(2)}\sqrt{ab}\ln\left(2^x-\frac{1}{a}\sqrt{ab}\right)-\frac{1}{2\,a^2\ln(2)}\sqrt{ab}\ln\left(2^x+\frac{1}{a}\sqrt{ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-b/(2^(2*x))),x)
```

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

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a - b/2^(2*x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.299034, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{\frac{b}{a}}\log\left(-\frac{2\cdot 2^{x}a\sqrt{\frac{b}{a}}-2^{2\,x}a-b}{2^{2\,x}a-b}\right)+2\cdot 2^{x}}{2\,a\log\left(2\right)}, -\frac{\sqrt{-\frac{b}{a}}\arctan\left(\frac{2^{x}}{\sqrt{-\frac{b}{a}}}\right)-2^{x}}{a\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a - b/2^(2*x)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b/a)*log(-(2*2^x*a*sqrt(b/a) - 2^(2*x)*a - b)/(2^(2*x)
*a - b)) + 2*2^x)/(a*log(2)), -(sqrt(-b/a)*arctan(2^x/sqrt(-b/a))
 - 2^x)/(a*log(2))]
```

Sympy [A] time = 0.296777, size = 44, normalized size = 1.02

$$\begin{cases}\frac{2^{x}}{a\log\left(2\right)} & \text{for}\: a\log\left(2\right)\neq 0\\ \frac{x}{a} & \text{otherwise}\end{cases} + \frac{\operatorname{RootSum}\left(4z^{2}a^{3}-b, \left(i\mapsto i\log\left(-\frac{2ia^{2}}{b}+2^{-x}\right)\right)\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-b/(2**(2*x))),x)
```

```
[Out] Piecewise((2**x/(a*log(2)), Ne(a*log(2), 0)), (x/a, True)) + Root
Sum(4*_z**2*a**3 - b, Lambda(_i, _i*log(-2*_i*a**2/b + 2**(-x))))
/log(2)
```

GIAC/XCAS [A] time = 0.222753, size = 53, normalized size = 1.23

$$\frac{b\arctan\left(\frac{2^{x}a}{\sqrt{-ab}}\right)}{\sqrt{-ab}a\ln\left(2\right)}+\frac{2^{x}}{a\ln\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/(a - b/2^(2*x)),x, algorithm="giac")
```

```
[Out] b*arctan(2^x*a/sqrt(-a*b))/(sqrt(-a*b)*a*ln(2)) + 2^x/(a*ln(2))
```

3.489 $\int \frac{2^x}{\sqrt{a+4^x b}} \, dx$

Optimal. Leaf size=31

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a+b4^x}}\right)}{\sqrt{b}\log(2)}$$

```
[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a + 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0632021, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a+b4^x}}\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a + 4^x*b],x]

[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a + 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 6.97096, size = 29, normalized size = 0.94

$$\frac{\operatorname{atanh}\left(\frac{2^x\sqrt{b}}{\sqrt{2^{2x}b+a}}\right)}{\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+4**x*b)**(1/2),x)

[Out] atanh(2**x*sqrt(b)/sqrt(2**(2*x)*b + a))/(sqrt(b)*log(2))
```

Mathematica [A] time = 0.0524564, size = 36, normalized size = 1.16

$$\frac{\log\left(\sqrt{b}\sqrt{a+b2^{2x}}+b2^x\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a + 4^x*b],x]

[Out] Log[2^x*b + Sqrt[b]*Sqrt[a + 2^(2*x)*b]]/(Sqrt[b]*Log[2])
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int 2^x \frac{1}{\sqrt{a+4^x b}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+4^x*b)^(1/2),x)

[Out] int(2^x/(a+4^x*b)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.275807, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(-2\sqrt{2^{2x}b+a}2^{x}b-\left(2\cdot 2^{2x}b+a\right)\sqrt{b}\right)}{2\sqrt{b}\log(2)}, \frac{\arctan\left(\frac{2^{x}\sqrt{-b}}{\sqrt{2^{2x}b+a}}\right)}{\sqrt{-b}\log(2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] [1/2*log(-2*sqrt(2^(2*x)*b + a)*2^x*b - (2*2^(2*x)*b + a)*sqrt(b)
)/(sqrt(b)*log(2)), arctan(2^x*sqrt(-b)/sqrt(2^(2*x)*b + a))/(sqr
t(-b)*log(2))]
```

Sympy [A] time = 1.15318, size = 85, normalized size = 2.74

$$\frac{\begin{cases} \frac{\sqrt{-\frac{a}{b}}\operatorname{asin}\left(2^{x}\sqrt{-\frac{b}{a}}\right)}{\sqrt{a}} & \text{for } a>0 \wedge b<0 \\ \frac{\sqrt{\frac{a}{b}}\operatorname{asinh}\left(2^{x}\sqrt{\frac{b}{a}}\right)}{\sqrt{a}} & \text{for } a>0 \wedge b>0 \\ \frac{\sqrt{-\frac{a}{b}}\operatorname{acosh}\left(2^{x}\sqrt{-\frac{b}{a}}\right)}{\sqrt{-a}} & \text{for } b>0 \wedge a<0 \end{cases}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+4**x*b)**(1/2),x)

[Out] Piecewise((sqrt(-a/b)*asin(2**x*sqrt(-b/a))/sqrt(a), (a > 0) & (b
 < 0)), (sqrt(a/b)*asinh(2**x*sqrt(b/a))/sqrt(a), (a > 0) & (b >
0)), (sqrt(-a/b)*acosh(2**x*sqrt(-b/a))/sqrt(-a), (b > 0) & (a <
0)))/log(2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2^{x}}{\sqrt{4^{x}b+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(2^x/sqrt(4^x*b + a), x)
```

3.490 $\int \frac{2^x}{\sqrt{a+2^{2x}b}}\,dx$

Optimal. Leaf size=31

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a+b4^x}}\right)}{\sqrt{b}\log(2)}$$

```
[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a + 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi [A] time = 0.061159, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a+b4^x}}\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a + 2^(2*x)*b],x]

[Out] ArcTanh[(2^x*Sqrt[b])/Sqrt[a + 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 7.40916, size = 29, normalized size = 0.94

$$\frac{\operatorname{atanh}\left(\frac{2^x\sqrt{b}}{\sqrt{2^{2x}b+a}}\right)}{\sqrt{b}\log{(2)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+2**(2*x)*b)**(1/2),x)

[Out] atanh(2**x*sqrt(b)/sqrt(2**(2*x)*b + a))/(sqrt(b)*log(2))
```

Mathematica [A] time = 0.0214581, size = 36, normalized size = 1.16

$$\frac{\log\left(\sqrt{b}\sqrt{a+b2^{2x}}+b2^x\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a + 2^(2*x)*b],x]

[Out] Log[2^x*b + Sqrt[b]*Sqrt[a + 2^(2*x)*b]]/(Sqrt[b]*Log[2])
```

Maple [F] time = 0.021, size = 0, normalized size = 0.

$$\int 2^x \frac{1}{\sqrt{a+2^{2\,x}b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+2^(2*x)*b)^(1/2),x)

[Out] int(2^x/(a+2^(2*x)*b)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(2^(2*x)*b + a),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.264847, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(-2\sqrt{2^{2x}b+a}2^{x}b-\left(2\cdot 2^{2x}b+a\right)\sqrt{b}\right)}{2\sqrt{b}\log(2)}, \frac{\arctan\left(\frac{2^{x}\sqrt{-b}}{\sqrt{2^{2x}b+a}}\right)}{\sqrt{-b}\log(2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(2^(2*x)*b + a),x, algorithm="fricas")

[Out] [1/2*log(-2*sqrt(2^(2*x)*b + a)*2^x*b - (2*2^(2*x)*b + a)*sqrt(b)
)/(sqrt(b)*log(2)), arctan(2^x*sqrt(-b)/sqrt(2^(2*x)*b + a))/(sqr
t(-b)*log(2))]
```

Sympy [A] time = 1.1579, size = 85, normalized size = 2.74

$$\frac{\begin{cases} \frac{\sqrt{-\frac{a}{b}}\operatorname{asin}\left(2^{x}\sqrt{-\frac{b}{a}}\right)}{\sqrt{a}} & \text{for } a > 0 \wedge b < 0 \\ \frac{\sqrt{\frac{a}{b}}\operatorname{asinh}\left(2^{x}\sqrt{\frac{b}{a}}\right)}{\sqrt{a}} & \text{for } a > 0 \wedge b > 0 \\ \frac{\sqrt{-\frac{a}{b}}\operatorname{acosh}\left(2^{x}\sqrt{-\frac{b}{a}}\right)}{\sqrt{-a}} & \text{for } b > 0 \wedge a < 0 \end{cases}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+2**(2*x)*b)**(1/2),x)

[Out] Piecewise((sqrt(-a/b)*asin(2**x*sqrt(-b/a))/sqrt(a), (a > 0) & (b
 < 0)), (sqrt(a/b)*asinh(2**x*sqrt(b/a))/sqrt(a), (a > 0) & (b >
0)), (sqrt(-a/b)*acosh(2**x*sqrt(-b/a))/sqrt(-a), (b > 0) & (a <
0)))/log(2)
```

GIAC/XCAS [A] time = 0.247191, size = 42, normalized size = 1.35

$$-\frac{\ln\left(\left|-2^{x}\sqrt{b}+\sqrt{2^{2x}b+a}\right|\right)}{\sqrt{b}\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(2^(2*x)*b + a),x, algorithm="giac")
```

```
[Out] -ln(abs(-2^x*sqrt(b) + sqrt(2^(2*x)*b + a)))/(sqrt(b)*ln(2))
```

3.491 $\int \frac{2^x}{\sqrt{a-4^x b}} \, dx$

Optimal. Leaf size=32

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a-b4^x}}\right)}{\sqrt{b}\log(2)}$$

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a - 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0633867, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a-b4^x}}\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a - 4^x*b],x]

[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a - 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 7.21038, size = 29, normalized size = 0.91

$$\frac{\operatorname{atan}\left(\frac{2^x\sqrt{b}}{\sqrt{-2^{2x}b+a}}\right)}{\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-4**x*b)**(1/2),x)

[Out] atan(2**x*sqrt(b)/sqrt(-2**(2*x)*b + a))/(sqrt(b)*log(2))
```

Mathematica [A] time = 0.0433916, size = 34, normalized size = 1.06

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a-b2^{2x}}}\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a - 4^x*b],x]

[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a - 2^(2*x)*b]]/(Sqrt[b]*Log[2])
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int 2^x \frac{1}{\sqrt{a-4^x b}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-4^x*b)^(1/2),x)
```

```
[Out] int(2^x/(a-4^x*b)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(-4^x*b + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.291415, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(2\sqrt{-2^{2x}b+a}2^{x}b+\left(2\cdot 2^{2x}b-a\right)\sqrt{-b}\right)}{2\sqrt{-b}\log\left(2\right)}, \frac{\arctan\left(\frac{2^{x}\sqrt{b}}{\sqrt{-2^{2x}b+a}}\right)}{\sqrt{b}\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(-4^x*b + a),x, algorithm="fricas")
```

```
[Out] [1/2*log(2*sqrt(-2^(2*x)*b + a)*2^x*b + (2*2^(2*x)*b - a)*sqrt(-b
))/(sqrt(-b)*log(2)), arctan(2^x*sqrt(b)/sqrt(-2^(2*x)*b + a))/(s
qrt(b)*log(2))]
```

Sympy [A] time = 1.17233, size = 87, normalized size = 2.72

$$\frac{\begin{cases} \frac{\sqrt{\frac{a}{b}}\operatorname{asin}\left(2^{x}\sqrt{\frac{b}{a}}\right)}{\sqrt{a}} & \text{for}\: a > 0 \wedge -b < 0 \\ \frac{\sqrt{-\frac{a}{b}}\operatorname{asinh}\left(2^{x}\sqrt{-\frac{b}{a}}\right)}{\sqrt{a}} & \text{for}\: a > 0 \wedge -b > 0 \\ \frac{\sqrt{\frac{a}{b}}\operatorname{acosh}\left(2^{x}\sqrt{\frac{b}{a}}\right)}{\sqrt{-a}} & \text{for}\: -b > 0 \wedge a < 0 \end{cases}}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-4**x*b)**(1/2),x)
```

```
[Out] Piecewise((sqrt(a/b)*asin(2**x*sqrt(b/a))/sqrt(a), (a > 0) & (-b
< 0)), (sqrt(-a/b)*asinh(2**x*sqrt(-b/a))/sqrt(a), (a > 0) & (-b
> 0)), (sqrt(a/b)*acosh(2**x*sqrt(b/a))/sqrt(-a), (a < 0) & (-b >
 0)))/log(2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2^{x}}{\sqrt{-4^{x}b+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(-4^x*b + a),x, algorithm="giac")
```

```
[Out] integrate(2^x/sqrt(-4^x*b + a), x)
```

3.492 $\int \frac{2^x}{\sqrt{a-2^{2x}b}}\,dx$

Optimal. Leaf size=32

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a-b4^x}}\right)}{\sqrt{b}\log(2)}$$

```
[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a - 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi [A] time = 0.0647834, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a-b4^x}}\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a - 2^(2*x)*b],x]

[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a - 4^x*b]]/(Sqrt[b]*Log[2])
```

Rubi in Sympy [A] time = 7.61735, size = 29, normalized size = 0.91

$$\frac{\operatorname{atan}\left(\frac{2^x\sqrt{b}}{\sqrt{-2^{2x}b+a}}\right)}{\sqrt{b}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-2**(2*x)*b)**(1/2),x)

[Out] atan(2**x*sqrt(b)/sqrt(-2**(2*x)*b + a))/(sqrt(b)*log(2))
```

Mathematica [A] time = 0.0254588, size = 34, normalized size = 1.06

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}2^x}{\sqrt{a-b2^{2x}}}\right)}{\sqrt{b}\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a - 2^(2*x)*b],x]

[Out] ArcTan[(2^x*Sqrt[b])/Sqrt[a - 2^(2*x)*b]]/(Sqrt[b]*Log[2])
```

Maple [F] time = 0.022, size = 0, normalized size = 0.

$$\int 2^x\frac{1}{\sqrt{a-2^{2\,x}b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-2^(2*x)*b)^(1/2),x)
```

```
[Out] int(2^x/(a-2^(2*x)*b)^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(-2^(2*x)*b + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.300708, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(2\sqrt{-2^{2x}b+a}2^{x}b+\left(2\cdot 2^{2x}b-a\right)\sqrt{-b}\right)}{2\sqrt{-b}\log\left(2\right)}, \frac{\arctan\left(\frac{2^{x}\sqrt{b}}{\sqrt{-2^{2x}b+a}}\right)}{\sqrt{b}\log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(-2^(2*x)*b + a),x, algorithm="fricas")
```

```
[Out] [1/2*log(2*sqrt(-2^(2*x)*b + a)*2^x*b + (2*2^(2*x)*b - a)*sqrt(-b
))/(sqrt(-b)*log(2)), arctan(2^x*sqrt(b)/sqrt(-2^(2*x)*b + a))/(s
qrt(b)*log(2))]
```

Sympy [A] time = 1.18157, size = 87, normalized size = 2.72

$$\frac{\begin{cases} \frac{\sqrt{\frac{a}{b}}\operatorname{asin}\left(2^{x}\sqrt{\frac{b}{a}}\right)}{\sqrt{a}} & \text{for } a > 0 \wedge -b < 0 \\ \frac{\sqrt{-\frac{a}{b}}\operatorname{asinh}\left(2^{x}\sqrt{-\frac{b}{a}}\right)}{\sqrt{a}} & \text{for } a > 0 \wedge -b > 0 \\ \frac{\sqrt{\frac{a}{b}}\operatorname{acosh}\left(2^{x}\sqrt{\frac{b}{a}}\right)}{\sqrt{-a}} & \text{for } -b > 0 \wedge a < 0 \end{cases}}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-2**(2*x)*b)**(1/2),x)
```

```
[Out] Piecewise((sqrt(a/b)*asin(2**x*sqrt(b/a))/sqrt(a), (a > 0) & (-b
< 0)), (sqrt(-a/b)*asinh(2**x*sqrt(-b/a))/sqrt(a), (a > 0) & (-b
> 0)), (sqrt(a/b)*acosh(2**x*sqrt(b/a))/sqrt(-a), (a < 0) & (-b >
 0)))/log(2)
```

GIAC/XCAS [A] time = 0.240397, size = 49, normalized size = 1.53

$$-\frac{\ln\left(\left|-2^{x}\sqrt{-b}+\sqrt{-2^{2x}b+a}\right|\right)}{\sqrt{-b}\ln\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(-2^(2*x)*b + a),x, algorithm="giac")
```

```
[Out] -ln(abs(-2^x*sqrt(-b) + sqrt(-2^(2*x)*b + a)))/(sqrt(-b)*ln(2))
```

3.493 $\int \frac{2^x}{\sqrt{a+4^{-x}b}}\,dx$

Optimal. Leaf size=24

$$\frac{2^x\sqrt{a+b2^{-2x}}}{a\log(2)}$$

```
[Out] (2^x*Sqrt[a + b/2^(2*x)])/(a*Log[2])
```

Rubi [A] time = 0.0755297, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2^x\sqrt{a+b2^{-2x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a + b/4^x],x]
```

```
[Out] (2^x*Sqrt[a + b/2^(2*x)])/(a*Log[2])
```

Rubi in Sympy [A] time = 5.84586, size = 19, normalized size = 0.79

$$\frac{2^x\sqrt{a+2^{-2x}b}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+b/(4**x))**(1/2),x)
```

```
[Out] 2**x*sqrt(a + 2**(-2*x)*b)/(a*log(2))
```

Mathematica [A] time = 0.0482995, size = 35, normalized size = 1.46

$$\frac{2^{-x}\left(a2^{2x}+b\right)}{a\log(2)\sqrt{a+b2^{-2x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a + b/4^x],x]
```

```
[Out] (2^(2*x)*a + b)/(2^x*a*Sqrt[a + b/2^(2*x)]*Log[2])
```

Maple [A] time = 0.043, size = 40, normalized size = 1.7

$$\frac{a(2^x)^2+b}{a2^x\ln(2)}\frac{1}{\sqrt{\frac{a(2^x)^2+b}{(2^x)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+b/(4^x))^(1/2),x)

[Out] 1/((a*(2^x)^2+b)/(2^x)^2)^(1/2)*(a*(2^x)^2+b)/(2^x)/a/ln(2)
```

Maxima [A] time = 0.850601, size = 32, normalized size = 1.33

$$\frac{4^{\frac{1}{2}x}\sqrt{a+\frac{b}{4^x}}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a + b/4^x),x, algorithm="maxima")

[Out] 4^(1/2*x)*sqrt(a + b/4^x)/(a*log(2))
```

Fricas [A] time = 0.274878, size = 41, normalized size = 1.71

$$\frac{2^x\sqrt{\frac{2^{2x}a+b}{2^{2x}}}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a + b/4^x),x, algorithm="fricas")

[Out] 2^x*sqrt((2^(2*x)*a + b)/2^(2*x))/(a*log(2))
```

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

$$\int\frac{2^x}{\sqrt{a+4^{-x}b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+b/(4**x))**(1/2),x)

[Out] Integral(2**x/sqrt(a + 4**(-x)*b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{2^x}{\sqrt{a+\frac{b}{4^x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a + b/4^x),x, algorithm="giac")

[Out] integrate(2^x/sqrt(a + b/4^x), x)
```

3.494 $\int \frac{2^x}{\sqrt{a+2^{-2x}b}}\,dx$

Optimal. Leaf size=24

$$\frac{2^x\sqrt{a+b2^{-2x}}}{a\log(2)}$$

```
[Out] (2^x*Sqrt[a + b/2^(2*x)])/(a*Log[2])
```

Rubi [A] time = 0.0743935, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2^x\sqrt{a+b2^{-2x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a + b/2^(2*x)],x]

[Out] (2^x*Sqrt[a + b/2^(2*x)])/(a*Log[2])
```

Rubi in Sympy [A] time = 6.14553, size = 19, normalized size = 0.79

$$\frac{2^x\sqrt{a+2^{-2x}b}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a+b/(2**(2*x)))**(1/2),x)

[Out] 2**x*sqrt(a + 2**(-2*x)*b)/(a*log(2))
```

Mathematica [A] time = 0.00811669, size = 35, normalized size = 1.46

$$\frac{2^{-x}\left(a2^{2x}+b\right)}{a\log(2)\sqrt{a+b2^{-2x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a + b/2^(2*x)],x]

[Out] (2^(2*x)*a + b)/(2^x*a*Sqrt[a + b/2^(2*x)]*Log[2])
```

Maple [A] time = 0.03, size = 40, normalized size = 1.7

$$\frac{a\,(2^x)^2+b}{a2^x\ln(2)}\frac{1}{\sqrt{\frac{a(2^x)^2+b}{(2^x)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a+b/(2^(2*x)))^(1/2),x)
```

```
[Out] 1/((a*(2^x)^2+b)/(2^x)^2)^(1/2)*(a*(2^x)^2+b)/(2^x)/a/ln(2)
```

Maxima [A] time = 0.789313, size = 32, normalized size = 1.33

$$\frac{2^x \sqrt{a + \frac{b}{2^{2x}}}}{a \log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a + b/2^(2*x)),x, algorithm="maxima")
```

```
[Out] 2^x*sqrt(a + b/2^(2*x))/(a*log(2))
```

Fricas [A] time = 0.266132, size = 41, normalized size = 1.71

$$\frac{2^x \sqrt{\frac{2^{2x} a + b}{2^{2x}}}}{a \log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a + b/2^(2*x)),x, algorithm="fricas")
```

```
[Out] 2^x*sqrt((2^(2*x)*a + b)/2^(2*x))/(a*log(2))
```

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

$$\int \frac{2^x}{\sqrt{a + 2^{-2x} b}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a+b/(2**(2*x)))**(1/2),x)
```

```
[Out] Integral(2**x/sqrt(a + 2**(-2*x)*b), x)
```

GIAC/XCAS [A] time = 0.219793, size = 39, normalized size = 1.62

$$\frac{\frac{\sqrt{2^{2x} a + b}}{a} - \frac{\sqrt{b}}{a}}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a + b/2^(2*x)),x, algorithm="giac")
```

```
[Out] (sqrt(2^(2*x)*a + b)/a - sqrt(b)/a)/ln(2)
```

3.495 $\int \frac{2^x}{\sqrt{a-4^{-x}b}}\,dx$

Optimal. Leaf size=25

$$\frac{2^x\sqrt{a-b2^{-2x}}}{a\log(2)}$$

```
[Out] (2^x*Sqrt[a - b/2^(2*x)])/(a*Log[2])
```

Rubi [A] time = 0.0780599, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2^x\sqrt{a-b2^{-2x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x/Sqrt[a - b/4^x],x]

[Out] (2^x*Sqrt[a - b/2^(2*x)])/(a*Log[2])
```

Rubi in Sympy [A] time = 6.21201, size = 19, normalized size = 0.76

$$\frac{2^x\sqrt{a-2^{-2x}b}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**x/(a-b/(4**x))**(1/2),x)

[Out] 2**x*sqrt(a - 2**(-2*x)*b)/(a*log(2))
```

Mathematica [A] time = 0.0480813, size = 38, normalized size = 1.52

$$\frac{2^{-x}\left(a2^{2x}-b\right)}{a\log(2)\sqrt{a-b2^{-2x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x/Sqrt[a - b/4^x],x]

[Out] (2^(2*x)*a - b)/(2^x*a*Sqrt[a - b/2^(2*x)]*Log[2])
```

Maple [A] time = 0.033, size = 44, normalized size = 1.8

$$\frac{a\left(2^x\right)^2-b}{a2^x\ln(2)}\frac{1}{\sqrt{\frac{a(2^x)^2-b}{(2^x)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-b/(4^x))^(1/2),x)

[Out] 1/((a*(2^x)^2-b)/(2^x)^2)^(1/2)*(a*(2^x)^2-b)/(2^x)/a/ln(2)
```

Maxima [A] time = 0.849624, size = 34, normalized size = 1.36

$$\frac{4^{\frac{1}{2}x}\sqrt{a-\frac{b}{4^x}}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a - b/4^x),x, algorithm="maxima")

[Out] 4^(1/2*x)*sqrt(a - b/4^x)/(a*log(2))
```

Fricas [A] time = 0.277497, size = 43, normalized size = 1.72

$$\frac{2^x\sqrt{\frac{2^{2x}a-b}{2^{2x}}}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a - b/4^x),x, algorithm="fricas")

[Out] 2^x*sqrt((2^(2*x)*a - b)/2^(2*x))/(a*log(2))
```

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

$$\int\frac{2^x}{\sqrt{a-4^{-x}b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-b/(4**x))**(1/2),x)

[Out] Integral(2**x/sqrt(a - 4**(-x)*b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{2^x}{\sqrt{a-\frac{b}{4^x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a - b/4^x),x, algorithm="giac")

[Out] integrate(2^x/sqrt(a - b/4^x), x)
```

3.496 $\int \frac{2^x}{\sqrt{a-2^{-2x}b}}\,dx$

Optimal. Leaf size=25

$$\frac{2^x\sqrt{a-b2^{-2x}}}{a\log(2)}$$

```
[Out] (2^x*Sqrt[a - b/2^(2*x)])/(a*Log[2])
```

Rubi [A] time = 0.0783562, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2^x\sqrt{a-b2^{-2x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In] Int[2^x/Sqrt[a - b/2^(2*x)],x]

[Out] (2^x*Sqrt[a - b/2^(2*x)])/(a*Log[2])
```

Rubi in Sympy [A] time = 6.4402, size = 19, normalized size = 0.76

$$\frac{2^x\sqrt{a-2^{-2x}b}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(2**x/(a-b/(2**(2*x)))**(1/2),x)

[Out] 2**x*sqrt(a - 2**(-2*x)*b)/(a*log(2))
```

Mathematica [A] time = 0.00841843, size = 38, normalized size = 1.52

$$\frac{2^{-x}\left(a2^{2x}-b\right)}{a\log(2)\sqrt{a-b2^{-2x}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[2^x/Sqrt[a - b/2^(2*x)],x]

[Out] (2^(2*x)*a - b)/(2^x*a*Sqrt[a - b/2^(2*x)]*Log[2])
```

Maple [A] time = 0.026, size = 44, normalized size = 1.8

$$\frac{a\left(2^x\right)^2-b}{a2^x\ln(2)}\frac{1}{\sqrt{\frac{a(2^x)^2-b}{(2^x)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^x/(a-b/(2^(2*x)))^(1/2),x)

[Out] 1/((a*(2^x)^2-b)/(2^x)^2)^(1/2)*(a*(2^x)^2-b)/(2^x)/a/ln(2)
```

Maxima [A] time = 0.741808, size = 34, normalized size = 1.36

$$\frac{2^{x}\sqrt{a-\frac{b}{2^{2x}}}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a - b/2^(2*x)),x, algorithm="maxima")

[Out] 2^x*sqrt(a - b/2^(2*x))/(a*log(2))
```

Fricas [A] time = 0.261832, size = 43, normalized size = 1.72

$$\frac{2^{x}\sqrt{\frac{2^{2x}a-b}{2^{2x}}}}{a\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a - b/2^(2*x)),x, algorithm="fricas")

[Out] 2^x*sqrt((2^(2*x)*a - b)/2^(2*x))/(a*log(2))
```

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

$$\int\frac{2^{x}}{\sqrt{a-2^{-2x}b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**x/(a-b/(2**(2*x)))**(1/2),x)

[Out] Integral(2**x/sqrt(a - 2**(-2*x)*b), x)
```

GIAC/XCAS [A] time = 0.258993, size = 45, normalized size = 1.8

$$\frac{\frac{\sqrt{2^{2x}a-b}}{a}-\frac{\sqrt{-b}}{a}}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x/sqrt(a - b/2^(2*x)),x, algorithm="giac")

[Out] (sqrt(2^(2*x)*a - b)/a - sqrt(-b)/a)/ln(2)
```

3.497 $\int \frac{4^x}{\sqrt{a+2^x b}}\,dx$

Optimal. Leaf size=44

$$\frac{2\left(a+b2^x\right)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a+b2^x}}{b^2\log(2)}$$

```
[Out] (-2*a*Sqrt[a + 2^x*b])/(b^2*Log[2]) + (2*(a + 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi [A] time = 0.0739046, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{2\left(a+b2^x\right)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a+b2^x}}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[4^x/Sqrt[a + 2^x*b],x]
```

```
[Out] (-2*a*Sqrt[a + 2^x*b])/(b^2*Log[2]) + (2*(a + 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi in Sympy [A] time = 9.33896, size = 39, normalized size = 0.89

$$-\frac{2a\sqrt{2^x b+a}}{b^2\log(2)}+\frac{2\left(2^x b+a\right)^{\frac{3}{2}}}{3b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4**x/(a+2**x*b)**(1/2),x)
```

```
[Out] -2*a*sqrt(2**x*b + a)/(b**2*log(2)) + 2*(2**x*b + a)**(3/2)/(3*b*
*2*log(2))
```

Mathematica [A] time = 0.0988223, size = 56, normalized size = 1.27

$$\frac{2\left(2a^2\left(\sqrt{\frac{b2^x}{a}+1}-1\right)-ab2^x+b^24^x\right)}{b^2\log(8)\sqrt{a+b2^x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[4^x/Sqrt[a + 2^x*b],x]
```

```
[Out] (2*(-(2^x*a*b) + 4^x*b^2 + 2*a^2*(-1 + Sqrt[1 + (2^x*b)/a])))/(b^
2*Sqrt[a + 2^x*b]*Log[8])
```

Maple [A] time = 0.023, size = 29, normalized size = 0.7

$$-\frac{-2\,2^x b+4\,a}{3\,b^2\ln(2)}\sqrt{a+2^x b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(4^x/(a+2^x*b)^(1/2),x)
```

```
[Out] -2/3*(-2^x*b+2*a)*(a+2^x*b)^(1/2)/b^2/ln(2)
```

Maxima [A] time = 0.912668, size = 92, normalized size = 2.09

$$\frac{2^{2x+1}}{3\sqrt{2^x b + a}\log(2)} - \frac{2^{x+1}a}{3\sqrt{2^x b + a}b\log(2)} - \frac{4a^2}{3\sqrt{2^x b + a}b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*2^(2*x + 1)/(sqrt(2^x*b + a)*log(2)) - 1/3*2^(x + 1)*a/(sqrt(
2^x*b + a)*b*log(2)) - 4/3*a^2/(sqrt(2^x*b + a)*b^2*log(2))
```

Fricas [A] time = 0.269427, size = 36, normalized size = 0.82

$$\frac{2\sqrt{2^x b + a}(2^x b - 2a)}{3b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2/3*sqrt(2^x*b + a)*(2^x*b - 2*a)/(b^2*log(2))
```

Sympy [A] time = 1.6304, size = 56, normalized size = 1.27

$$\begin{cases} \frac{2\cdot 2^x\sqrt{2^x b+a}}{3b\log(2)} - \frac{4a\sqrt{2^x b+a}}{3b^2\log(2)} & \text{for}\ b \neq 0 \\ \frac{4^x}{2\sqrt{a}\log(2)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(4**x/(a+2**x*b)**(1/2),x)
```

```
[Out] Piecewise((2*2**x*sqrt(2**x*b + a)/(3*b*log(2)) - 4*a*sqrt(2**x*b
 + a)/(3*b**2*log(2)), Ne(b, 0)), (4**x/(2*sqrt(a)*log(2)), True)
)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x}{\sqrt{2^x b + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(4^x/sqrt(2^x*b + a), x)
```

3.498 $\int \frac{2^{2x}}{\sqrt{a+2^x b}}\,dx$

Optimal. Leaf size=44

$$\frac{2\left(a+b2^x\right)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a+b2^x}}{b^2\log(2)}$$

```
[Out] (-2*a*Sqrt[a + 2^x*b])/(b^2*Log[2]) + (2*(a + 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi [A] time = 0.0768762, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2\left(a+b2^x\right)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a+b2^x}}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/Sqrt[a + 2^x*b],x]
```

```
[Out] (-2*a*Sqrt[a + 2^x*b])/(b^2*Log[2]) + (2*(a + 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi in Sympy [A] time = 9.34598, size = 39, normalized size = 0.89

$$-\frac{2a\sqrt{2^x b+a}}{b^2\log{(2)}}+\frac{2\left(2^x b+a\right)^{\frac{3}{2}}}{3b^2\log{(2)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a+2**x*b)**(1/2),x)
```

```
[Out] -2*a*sqrt(2**x*b + a)/(b**2*log(2)) + 2*(2**x*b + a)**(3/2)/(3*b*
*2*log(2))
```

Mathematica [A] time = 0.0205592, size = 56, normalized size = 1.27

$$\frac{2\left(2a^2\left(\sqrt{\frac{b2^x}{a}+1}-1\right)-ab2^x+b^2 4^x\right)}{b^2\log(8)\sqrt{a+b2^x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/Sqrt[a + 2^x*b],x]
```

```
[Out] (2*(-(2^x*a*b) + 4^x*b^2 + 2*a^2*(-1 + Sqrt[1 + (2^x*b)/a])))/(b^
2*Sqrt[a + 2^x*b]*Log[8])
```

Maple [A] time = 0.016, size = 29, normalized size = 0.7

$$-\frac{-2\,2^x b+4\,a}{3\,b^2\ln{(2)}}\sqrt{a+2^x b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a+2^x*b)^(1/2),x)
```

```
[Out] -2/3*(-2^x*b+2*a)*(a+2^x*b)^(1/2)/b^2/ln(2)
```

Maxima [A] time = 0.813265, size = 51, normalized size = 1.16

$$\frac{2\,(2^x b + a)^{\frac{3}{2}}}{3\,b^2 \log(2)} - \frac{2\,\sqrt{2^x b + a}a}{b^2 \log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(2^x*b + a),x, algorithm="maxima")
```

```
[Out] 2/3*(2^x*b + a)^(3/2)/(b^2*log(2)) - 2*sqrt(2^x*b + a)*a/(b^2*log
(2))
```

Fricas [A] time = 0.258743, size = 36, normalized size = 0.82

$$\frac{2\,\sqrt{2^x b + a}(2^x b - 2\,a)}{3\,b^2 \log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(2^x*b + a),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(2^x*b + a)*(2^x*b - 2*a)/(b^2*log(2))
```

Sympy [A] time = 1.63672, size = 58, normalized size = 1.32

$$\begin{cases} \frac{2\cdot 2^x\sqrt{2^x b+a}}{3b\log(2)} - \frac{4a\sqrt{2^x b+a}}{3b^2\log(2)} & \text{for } b \neq 0 \\ \frac{2^{2x}}{2\sqrt{a}\log(2)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a+2**x*b)**(1/2),x)
```

```
[Out] Piecewise((2*2**x*sqrt(2**x*b + a)/(3*b*log(2)) - 4*a*sqrt(2**x*b
 + a)/(3*b**2*log(2)), Ne(b, 0)), (2**(2*x)/(2*sqrt(a)*log(2)), T
rue))
```

GIAC/XCAS [A] time = 0.23417, size = 42, normalized size = 0.95

$$\frac{2\left((2^x b + a)^{\frac{3}{2}} - 3\,\sqrt{2^x b + a}a\right)}{3\,b^2 \ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(2^x*b + a),x, algorithm="giac")
```

```
[Out] 2/3*((2^x*b + a)^(3/2) - 3*sqrt(2^x*b + a)*a)/(b^2*ln(2))
```

3.499 $\int \frac{4^x}{\sqrt{a-2^x b}}\,dx$

Optimal. Leaf size=46

$$\frac{2(a-b2^x)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a-b2^x}}{b^2\log(2)}$$

```
[Out] (-2*a*Sqrt[a - 2^x*b])/(b^2*Log[2]) + (2*(a - 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi [A] time = 0.078743, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{2(a-b2^x)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a-b2^x}}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[4^x/Sqrt[a - 2^x*b],x]
```

```
[Out] (-2*a*Sqrt[a - 2^x*b])/(b^2*Log[2]) + (2*(a - 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi in Sympy [A] time = 10.0612, size = 39, normalized size = 0.85

$$-\frac{2a\sqrt{-2^x b+a}}{b^2\log(2)}+\frac{2(-2^x b+a)^{\frac{3}{2}}}{3b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4**x/(a-2**x*b)**(1/2),x)
```

```
[Out] -2*a*sqrt(-2**x*b + a)/(b**2*log(2)) + 2*(-2**x*b + a)**(3/2)/(3*
b**2*log(2))
```

Mathematica [A] time = 0.10092, size = 57, normalized size = 1.24

$$\frac{2\left(2a^2\left(\sqrt{1-\frac{b2^x}{a}}-1\right)+ab2^x+b^2 4^x\right)}{b^2\log(8)\sqrt{a-b2^x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[4^x/Sqrt[a - 2^x*b],x]
```

```
[Out] (2*(2^x*a*b + 4^x*b^2 + 2*a^2*(-1 + Sqrt[1 - (2^x*b)/a])))/(b^2*S
qrt[a - 2^x*b]*Log[8])
```

Maple [A] time = 0.024, size = 29, normalized size = 0.6

$$-\frac{2\,2^x b+4\,a}{3\,b^2\ln(2)}\sqrt{a-2^x b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(4^x/(a-2^x*b)^(1/2),x)
```

```
[Out] -2/3*(2^x*b+2*a)/b^2*(a-2^x*b)^(1/2)/ln(2)
```

Maxima [A] time = 0.902818, size = 96, normalized size = 2.09

$$\frac{2^{2x+1}}{3\sqrt{-2^x b + a}\log(2)} + \frac{2^{x+1}a}{3\sqrt{-2^x b + a}b\log(2)} - \frac{4a^2}{3\sqrt{-2^x b + a}b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(-2^x*b + a),x, algorithm="maxima")
```

```
[Out] 1/3*2^(2*x + 1)/(sqrt(-2^x*b + a)*log(2)) + 1/3*2^(x + 1)*a/(sqrt
(-2^x*b + a)*b*log(2)) - 4/3*a^2/(sqrt(-2^x*b + a)*b^2*log(2))
```

Fricas [A] time = 0.243144, size = 38, normalized size = 0.83

$$-\frac{2(2^x b + 2a)\sqrt{-2^x b + a}}{3b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(-2^x*b + a),x, algorithm="fricas")
```

```
[Out] -2/3*(2^x*b + 2*a)*sqrt(-2^x*b + a)/(b^2*log(2))
```

Sympy [A] time = 1.62732, size = 58, normalized size = 1.26

$$\begin{cases} -\frac{2\cdot 2^x\sqrt{-2^x b+a}}{3b\log(2)} - \frac{4a\sqrt{-2^x b+a}}{3b^2\log(2)} & \text{for } b \neq 0 \\ \frac{4^x}{2\sqrt{a}\log(2)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4**x/(a-2**x*b)**(1/2),x)
```

```
[Out] Piecewise((-2*2**x*sqrt(-2**x*b + a)/(3*b*log(2)) - 4*a*sqrt(-2**
x*b + a)/(3*b**2*log(2)), Ne(b, 0)), (4**x/(2*sqrt(a)*log(2)), Tr
ue))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x}{\sqrt{-2^x b + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(-2^x*b + a),x, algorithm="giac")
```

```
[Out] integrate(4^x/sqrt(-2^x*b + a), x)
```

3.500 $\int \frac{2^{2x}}{\sqrt{a-2^x b}}\,dx$

Optimal. Leaf size=46

$$\frac{2\left(a-b2^x\right)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a-b2^x}}{b^2\log(2)}$$

```
[Out] (-2*a*Sqrt[a - 2^x*b])/(b^2*Log[2]) + (2*(a - 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi [A] time = 0.0827079, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2\left(a-b2^x\right)^{3/2}}{3b^2\log(2)}-\frac{2a\sqrt{a-b2^x}}{b^2\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/Sqrt[a - 2^x*b],x]
```

```
[Out] (-2*a*Sqrt[a - 2^x*b])/(b^2*Log[2]) + (2*(a - 2^x*b)^(3/2))/(3*b^
2*Log[2])
```

Rubi in Sympy [A] time = 10.1111, size = 39, normalized size = 0.85

$$-\frac{2a\sqrt{-2^x b+a}}{b^2\log(2)}+\frac{2\left(-2^x b+a\right)^{\frac{3}{2}}}{3b^2\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a-2**x*b)**(1/2),x)
```

```
[Out] -2*a*sqrt(-2**x*b + a)/(b**2*log(2)) + 2*(-2**x*b + a)**(3/2)/(3*
b**2*log(2))
```

Mathematica [A] time = 0.0198677, size = 57, normalized size = 1.24

$$\frac{2\left(2a^2\left(\sqrt{1-\frac{b2^x}{a}}-1\right)+ab2^x+b^24^x\right)}{b^2\log(8)\sqrt{a-b2^x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/Sqrt[a - 2^x*b],x]
```

```
[Out] (2*(2^x*a*b + 4^x*b^2 + 2*a^2*(-1 + Sqrt[1 - (2^x*b)/a])))/(b^2*S
qrt[a - 2^x*b]*Log[8])
```

Maple [A] time = 0.018, size = 29, normalized size = 0.6

$$-\frac{2\,2^x b+4\,a}{3\,b^2\ln(2)}\sqrt{a-2^x b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a-2^x*b)^(1/2),x)
```

```
[Out] -2/3*(2^x*b+2*a)/b^2*(a-2^x*b)^(1/2)/ln(2)
```

Maxima [A] time = 0.771617, size = 54, normalized size = 1.17

$$\frac{2\,(-2^{x}b+a)^{\frac{3}{2}}}{3\,b^{2}\log(2)}-\frac{2\,\sqrt{-2^{x}b+a}a}{b^{2}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(-2^x*b + a),x, algorithm="maxima")
```

```
[Out] 2/3*(-2^x*b + a)^(3/2)/(b^2*log(2)) - 2*sqrt(-2^x*b + a)*a/(b^2*l
og(2))
```

Fricas [A] time = 0.255499, size = 38, normalized size = 0.83

$$-\frac{2\,(2^{x}b+2\,a)\sqrt{-2^{x}b+a}}{3\,b^{2}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(-2^x*b + a),x, algorithm="fricas")
```

```
[Out] -2/3*(2^x*b + 2*a)*sqrt(-2^x*b + a)/(b^2*log(2))
```

Sympy [A] time = 1.6277, size = 60, normalized size = 1.3

$$\begin{cases} -\frac{2\cdot 2^{x}\sqrt{-2^{x}b+a}}{3b\log(2)}-\frac{4a\sqrt{-2^{x}b+a}}{3b^{2}\log(2)} & \text{for } b\neq 0 \\ \frac{2^{2x}}{2\sqrt{a}\log(2)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a-2**x*b)**(1/2),x)
```

```
[Out] Piecewise((-2*2**x*sqrt(-2**x*b + a)/(3*b*log(2)) - 4*a*sqrt(-2**
x*b + a)/(3*b**2*log(2)), Ne(b, 0)), (2**(2*x)/(2*sqrt(a)*log(2))
, True))
```

GIAC/XCAS [A] time = 0.243564, size = 45, normalized size = 0.98

$$\frac{2\left((-2^{x}b+a)^{\frac{3}{2}}-3\,\sqrt{-2^{x}b+a}a\right)}{3\,b^{2}\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(-2^x*b + a),x, algorithm="giac")
```

```
[Out] 2/3*((-2^x*b + a)^(3/2) - 3*sqrt(-2^x*b + a)*a)/(b^2*ln(2))
```

3.501 $\int \frac{4^x}{\sqrt{a+2^{-x}b}} dx$

Optimal. Leaf size=93

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}-\frac{3b2^{x-2}\sqrt{a+b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a+b2^{-x}}}{a\log(2)}$$

```
[Out] (2^(-1 + 2*x)*Sqrt[a + b/2^x])/(a*Log[2]) - (3*2^(-2 + x)*b*Sqrt[
a + b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a + b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi [A] time = 0.152391, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}-\frac{3b2^{x-2}\sqrt{a+b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a+b2^{-x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[4^x/Sqrt[a + b/2^x],x]
```

```
[Out] (2^(-1 + 2*x)*Sqrt[a + b/2^x])/(a*Log[2]) - (3*2^(-2 + x)*b*Sqrt[
a + b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a + b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi in Sympy [A] time = 12.5381, size = 78, normalized size = 0.84

$$\frac{2^{2x}\sqrt{a+2^{-x}b}}{2a\log(2)}-\frac{3\cdot 2^x b\sqrt{a+2^{-x}b}}{4a^2\log(2)}+\frac{3b^2\operatorname{atanh}\left(\frac{\sqrt{a+2^{-x}b}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4**x/(a+b/(2**x))**(1/2),x)
```

```
[Out] 2**(2*x)*sqrt(a + 2**(-x)*b)/(2*a*log(2)) - 3*2**x*b*sqrt(a + 2**
(-x)*b)/(4*a**2*log(2)) + 3*b**2*atanh(sqrt(a + 2**(-x)*b)/sqrt(a
))/(4*a**(5/2)*log(2))
```

Mathematica [A] time = 0.133565, size = 114, normalized size = 1.23

$$\frac{2^{-\frac{x}{2}-2}\left(\sqrt{a}2^{x/2}\left(a^2 2^{2x+1}-ab2^x-3b^2\right)+3b^2\sqrt{a2^x+b}\log\left(\sqrt{a}\sqrt{a2^x+b}+a2^{x/2}\right)\right)}{a^{5/2}\log(2)\sqrt{a+b2^{-x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[4^x/Sqrt[a + b/2^x],x]
```

```
[Out] (2^(-2 - x/2)*(2^(x/2)*Sqrt[a]*(2^(1 + 2*x)*a^2 - 2^x*a*b - 3*b^2
) + 3*b^2*Sqrt[2^x*a + b]*Log[2^(x/2)*a + Sqrt[a]*Sqrt[2^x*a + b]
]))/(a^(5/2)*Sqrt[a + b/2^x]*Log[2])
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 4^{x} \frac{1}{\sqrt{a+\frac{b}{2^{x}}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(4^x/(a+b/(2^x))^(1/2),x)
```

```
[Out] int(4^x/(a+b/(2^x))^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(a + b/2^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.26341, size = 1, normalized size = 0.01

$$\left[\frac{3\, b^{2} \log\left(2\cdot 2^{x} a \sqrt{\frac{2^{x} a+b}{2^{x}}}+(2\cdot 2^{x} a+b)\sqrt{a}\right)+2\left(2\cdot 2^{2\, x} a-3\cdot 2^{x} b\right)\sqrt{a}\sqrt{\frac{2^{x} a+b}{2^{x}}}}{8\, a^{\frac{5}{2}} \log(2)},\ -\frac{3\, b^{2} \arctan\left(\frac{a}{\sqrt{-a}\sqrt{\frac{2^{x} a+b}{2^{x}}}}\right)-\left(2\cdot 2^{2\, x} a-3\cdot 2^{x} b\right)\sqrt{-a}\sqrt{\frac{2^{x} a+b}{2^{x}}}}{4\sqrt{-a} a^{2} \log(2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(a + b/2^x),x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*log(2*2^x*a*sqrt((2^x*a + b)/2^x) + (2*2^x*a + b)*sqr
t(a)) + 2*(2*2^(2*x)*a - 3*2^x*b)*sqrt(a)*sqrt((2^x*a + b)/2^x))/
(a^(5/2)*log(2)), -1/4*(3*b^2*arctan(a/(sqrt(-a)*sqrt((2^x*a + b)
/2^x))) - (2*2^(2*x)*a - 3*2^x*b)*sqrt(-a)*sqrt((2^x*a + b)/2^x))
/(sqrt(-a)*a^2*log(2))]
```

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

$$\int \frac{4^{x}}{\sqrt{a+2^{-x} b}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4**x/(a+b/(2**x))**(1/2),x)
```

```
[Out] Integral(4**x/sqrt(a + 2**(-x)*b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x}{\sqrt{a + \frac{b}{2^x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(a + b/2^x),x, algorithm="giac")
```

```
[Out] integrate(4^x/sqrt(a + b/2^x), x)
```

3.502 $\int \frac{2^{2x}}{\sqrt{a+2^{-x}b}}\,dx$

Optimal. Leaf size=93

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}-\frac{3b2^{x-2}\sqrt{a+b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a+b2^{-x}}}{a\log(2)}$$

```
[Out] (2^(-1 + 2*x)*Sqrt[a + b/2^x])/(a*Log[2]) - (3*2^(-2 + x)*b*Sqrt[
a + b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a + b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi [A] time = 0.150186, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}-\frac{3b2^{x-2}\sqrt{a+b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a+b2^{-x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/Sqrt[a + b/2^x],x]
```

```
[Out] (2^(-1 + 2*x)*Sqrt[a + b/2^x])/(a*Log[2]) - (3*2^(-2 + x)*b*Sqrt[
a + b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a + b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi in Sympy [A] time = 12.5274, size = 78, normalized size = 0.84

$$\frac{2^{2x}\sqrt{a+2^{-x}b}}{2a\log(2)}-\frac{3\cdot 2^{x}b\sqrt{a+2^{-x}b}}{4a^2\log(2)}+\frac{3b^2\,\mathrm{atanh}\left(\frac{\sqrt{a+2^{-x}b}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a+b/(2**x))**(1/2),x)
```

```
[Out] 2**(2*x)*sqrt(a + 2**(-x)*b)/(2*a*log(2)) - 3*2**x*b*sqrt(a + 2**
(-x)*b)/(4*a**2*log(2)) + 3*b**2*atanh(sqrt(a + 2**(-x)*b)/sqrt(a
))/(4*a**(5/2)*log(2))
```

Mathematica [A] time = 0.0324053, size = 114, normalized size = 1.23

$$\frac{2^{-\frac{x}{2}-2}\left(\sqrt{a}2^{x/2}\left(a^2 2^{2x+1}-ab2^x-3b^2\right)+3b^2\sqrt{a2^x+b}\log\left(\sqrt{a}\sqrt{a2^x+b}+a2^{x/2}\right)\right)}{a^{5/2}\log(2)\sqrt{a+b2^{-x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/Sqrt[a + b/2^x],x]
```

```
[Out] (2^(-2 - x/2)*(2^(x/2)*Sqrt[a]*(2^(1 + 2*x)*a^2 - 2^x*a*b - 3*b^2
) + 3*b^2*Sqrt[2^x*a + b]*Log[2^(x/2)*a + Sqrt[a]*Sqrt[2^x*a + b]
]))/(a^(5/2)*Sqrt[a + b/2^x]*Log[2])
```

Maple [F] time = 0.023, size = 0, normalized size = 0.

$$\int 2^{2 x} \frac{1}{\sqrt{a + \frac{b}{2^{x}}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a+b/(2^x))^(1/2),x)
```

```
[Out] int(2^(2*x)/(a+b/(2^x))^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(a + b/2^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.25099, size = 1, normalized size = 0.01

$$\left[\frac{3\, b^{2} \log\left(2 \cdot 2^{x} a \sqrt{\frac{2^{x} a + b}{2^{x}}} + \left(2 \cdot 2^{x} a + b\right) \sqrt{a}\right) + 2\, \left(2 \cdot 2^{2\, x} a - 3 \cdot 2^{x} b\right) \sqrt{a} \sqrt{\frac{2^{x} a + b}{2^{x}}}}{8\, a^{\frac{5}{2}} \log\left(2\right)},\right.$$
$$\left. -\frac{3\, b^{2} \arctan\left(\frac{a}{\sqrt{-a} \sqrt{\frac{2^{x} a + b}{2^{x}}}}\right) - \left(2 \cdot 2^{2\, x} a - 3 \cdot 2^{x} b\right) \sqrt{-a} \sqrt{\frac{2^{x} a + b}{2^{x}}}}{4\, \sqrt{-a} a^{2} \log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(a + b/2^x),x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*log(2*2^x*a*sqrt((2^x*a + b)/2^x) + (2*2^x*a + b)*sqr
t(a)) + 2*(2*2^(2*x)*a - 3*2^x*b)*sqrt(a)*sqrt((2^x*a + b)/2^x))/
(a^(5/2)*log(2)), -1/4*(3*b^2*arctan(a/(sqrt(-a)*sqrt((2^x*a + b)
/2^x))) - (2*2^(2*x)*a - 3*2^x*b)*sqrt(-a)*sqrt((2^x*a + b)/2^x))
/(sqrt(-a)*a^2*log(2))]
```

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

$$\int \frac{2^{2x}}{\sqrt{a + 2^{-x} b}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a+b/(2**x))**(1/2),x)
```

```
[Out] Integral(2**(2*x)/sqrt(a + 2**(-x)*b), x)
```

GIAC/XCAS [A] time = 0.297582, size = 127, normalized size = 1.37

$$\frac{2\sqrt{2^{2x}a + 2^{x}b}\left(\frac{2\cdot 2^{x}}{a} - \frac{3b}{a^{2}}\right) - \frac{3b^{2}\ln\left(\left|-2\left(2^{x}\sqrt{a} - \sqrt{2^{2x}a + 2^{x}b}\right)\sqrt{a} - b\right|\right)}{a^{\frac{5}{2}}} + \frac{3b^{2}\ln\left(|b|\right)}{a^{\frac{5}{2}}}}{8\ln\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(a + b/2^x),x, algorithm="giac")
```

```
[Out] 1/8*(2*sqrt(2^(2*x)*a + 2^x*b)*(2*2^x/a - 3*b/a^2) - 3*b^2*ln(abs
(-2*(2^x*sqrt(a) - sqrt(2^(2*x)*a + 2^x*b))*sqrt(a) - b))/a^(5/2)
 + 3*b^2*ln(abs(b))/a^(5/2))/ln(2)
```

3.503 $\int \frac{4^x}{\sqrt{a-2^{-x}b}}\,dx$

Optimal. Leaf size=96

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a-b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}+\frac{3b2^{x-2}\sqrt{a-b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a-b2^{-x}}}{a\log(2)}$$

```
[Out] (2^(-1 + 2*x)*Sqrt[a - b/2^x])/(a*Log[2]) + (3*2^(-2 + x)*b*Sqrt[
a - b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a - b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi [A] time = 0.154667, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a-b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}+\frac{3b2^{x-2}\sqrt{a-b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a-b2^{-x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[4^x/Sqrt[a - b/2^x],x]
```

```
[Out] (2^(-1 + 2*x)*Sqrt[a - b/2^x])/(a*Log[2]) + (3*2^(-2 + x)*b*Sqrt[
a - b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a - b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi in Sympy [A] time = 13.4536, size = 78, normalized size = 0.81

$$\frac{2^{2x}\sqrt{a-2^{-x}b}}{2a\log(2)}+\frac{3\cdot 2^{x}b\sqrt{a-2^{-x}b}}{4a^2\log(2)}+\frac{3b^2\operatorname{atanh}\left(\frac{\sqrt{a-2^{-x}b}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4**x/(a-b/(2**x))**(1/2),x)
```

```
[Out] 2**(2*x)*sqrt(a - 2**(-x)*b)/(2*a*log(2)) + 3*2**x*b*sqrt(a - 2**
(-x)*b)/(4*a**2*log(2)) + 3*b**2*atanh(sqrt(a - 2**(-x)*b)/sqrt(a
))/(4*a**(5/2)*log(2))
```

Mathematica [A] time = 0.118857, size = 118, normalized size = 1.23

$$\frac{2^{-\frac{x}{2}-2}\left(\sqrt{a}2^{x/2}\left(a^2 2^{2x+1}+ab2^x-3b^2\right)+3b^2\sqrt{a2^x-b}\log\left(\sqrt{a}\sqrt{a2^x-b}+a2^{x/2}\right)\right)}{a^{5/2}\log(2)\sqrt{a-b2^{-x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[4^x/Sqrt[a - b/2^x],x]
```

```
[Out] (2^(-2 - x/2)*(2^(x/2)*Sqrt[a]*(2^(1 + 2*x)*a^2 + 2^x*a*b - 3*b^2
) + 3*Sqrt[2^x*a - b]*b^2*Log[2^(x/2)*a + Sqrt[a]*Sqrt[2^x*a - b]
]))/(a^(5/2)*Sqrt[a - b/2^x]*Log[2])
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int 4^{x} \frac{1}{\sqrt{a - \frac{b}{2^{x}}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(4^x/(a-b/(2^x))^(1/2),x)
```

```
[Out] int(4^x/(a-b/(2^x))^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(a - b/2^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.267434, size = 1, normalized size = 0.01

$$\left[\frac{3\, b^{2} \log\left(-2 \cdot 2^{x} a \sqrt{\frac{2^{x} a - b}{2^{x}}} - \left(2 \cdot 2^{x} a - b\right)\sqrt{a}\right) + 2\left(2 \cdot 2^{2\,x} a + 3 \cdot 2^{x} b\right)\sqrt{a}\sqrt{\frac{2^{x} a - b}{2^{x}}}}{8\, a^{\frac{5}{2}} \log\left(2\right)},\right.$$
$$\left. -\frac{3\, b^{2} \arctan\left(\frac{a}{\sqrt{-a}\sqrt{\frac{2^{x} a - b}{2^{x}}}}\right) - \left(2 \cdot 2^{2\,x} a + 3 \cdot 2^{x} b\right)\sqrt{-a}\sqrt{\frac{2^{x} a - b}{2^{x}}}}{4\sqrt{-a} a^{2} \log\left(2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(a - b/2^x),x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*log(-2*2^x*a*sqrt((2^x*a - b)/2^x) - (2*2^x*a - b)*sq
rt(a)) + 2*(2*2^(2*x)*a + 3*2^x*b)*sqrt(a)*sqrt((2^x*a - b)/2^x))
/(a^(5/2)*log(2)), -1/4*(3*b^2*arctan(a/(sqrt(-a)*sqrt((2^x*a - b
)/2^x))) - (2*2^(2*x)*a + 3*2^x*b)*sqrt(-a)*sqrt((2^x*a - b)/2^x)
)/(sqrt(-a)*a^2*log(2))]
```

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

$$\int \frac{4^{x}}{\sqrt{a - 2^{- x} b}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4**x/(a-b/(2**x))**(1/2),x)
```

```
[Out] Integral(4**x/sqrt(a - 2**(-x)*b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x}{\sqrt{a - \frac{b}{2^x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4^x/sqrt(a - b/2^x),x, algorithm="giac")
```

```
[Out] integrate(4^x/sqrt(a - b/2^x), x)
```

3.504 $\int \frac{2^{2x}}{\sqrt{a-2^{-x}b}}\,dx$

Optimal. Leaf size=96

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a-b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}+\frac{3b2^{x-2}\sqrt{a-b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a-b2^{-x}}}{a\log(2)}$$

```
[Out] (2^(-1 + 2*x)*Sqrt[a - b/2^x])/(a*Log[2]) + (3*2^(-2 + x)*b*Sqrt[
a - b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a - b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi [A] time = 0.160531, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a-b2^{-x}}}{\sqrt{a}}\right)}{4a^{5/2}\log(2)}+\frac{3b2^{x-2}\sqrt{a-b2^{-x}}}{a^2\log(2)}+\frac{2^{2x-1}\sqrt{a-b2^{-x}}}{a\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(2*x)/Sqrt[a - b/2^x],x]
```

```
[Out] (2^(-1 + 2*x)*Sqrt[a - b/2^x])/(a*Log[2]) + (3*2^(-2 + x)*b*Sqrt[
a - b/2^x])/(a^2*Log[2]) + (3*b^2*ArcTanh[Sqrt[a - b/2^x]/Sqrt[a]
])/(4*a^(5/2)*Log[2])
```

Rubi in Sympy [A] time = 13.3706, size = 78, normalized size = 0.81

$$\frac{2^{2x}\sqrt{a-2^{-x}b}}{2a\log(2)}+\frac{3\cdot 2^{x}b\sqrt{a-2^{-x}b}}{4a^2\log(2)}+\frac{3b^2\operatorname{atanh}\left(\frac{\sqrt{a-2^{-x}b}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(2*x)/(a-b/(2**x))**(1/2),x)
```

```
[Out] 2**(2*x)*sqrt(a - 2**(-x)*b)/(2*a*log(2)) + 3*2**x*b*sqrt(a - 2**
(-x)*b)/(4*a**2*log(2)) + 3*b**2*atanh(sqrt(a - 2**(-x)*b)/sqrt(a
))/(4*a**(5/2)*log(2))
```

Mathematica [A] time = 0.0511842, size = 118, normalized size = 1.23

$$\frac{2^{-\frac{x}{2}-2}\left(\sqrt{a}2^{x/2}\left(a^2 2^{2x+1}+ab2^x-3b^2\right)+3b^2\sqrt{a2^x-b}\log\left(\sqrt{a}\sqrt{a2^x-b}+a2^{x/2}\right)\right)}{a^{5/2}\log(2)\sqrt{a-b2^{-x}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(2*x)/Sqrt[a - b/2^x],x]
```

```
[Out] (2^(-2 - x/2)*(2^(x/2)*Sqrt[a]*(2^(1 + 2*x)*a^2 + 2^x*a*b - 3*b^2
) + 3*Sqrt[2^x*a - b]*b^2*Log[2^(x/2)*a + Sqrt[a]*Sqrt[2^x*a - b]
]))/(a^(5/2)*Sqrt[a - b/2^x]*Log[2])
```

Maple [F] time = 0.022, size = 0, normalized size = 0.

$$\int 2^{2x}\frac{1}{\sqrt{a-\frac{b}{2^{x}}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(2*x)/(a-b/(2^x))^(1/2),x)
```

```
[Out] int(2^(2*x)/(a-b/(2^x))^(1/2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(a - b/2^x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.268033, size = 1, normalized size = 0.01

$$\left[\frac{3\,b^{2}\log\left(-2\cdot 2^{x}a\sqrt{\frac{2^{x}a-b}{2^{x}}}-(2\cdot 2^{x}a-b)\sqrt{a}\right)+2\left(2\cdot 2^{2\,x}a+3\cdot 2^{x}b\right)\sqrt{a}\sqrt{\frac{2^{x}a-b}{2^{x}}}}{8\,a^{\frac{5}{2}}\log(2)},\ -\frac{3\,b^{2}\arctan\left(\frac{a}{\sqrt{-a}\sqrt{\frac{2^{x}a-b}{2^{x}}}}\right)-\left(2\cdot 2^{2\,x}a+3\cdot 2^{x}b\right)\sqrt{-a}\sqrt{\frac{2^{x}a-b}{2^{x}}}}{4\sqrt{-a}a^{2}\log(2)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(a - b/2^x),x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*log(-2*2^x*a*sqrt((2^x*a - b)/2^x) - (2*2^x*a - b)*sq
rt(a)) + 2*(2*2^(2*x)*a + 3*2^x*b)*sqrt(a)*sqrt((2^x*a - b)/2^x))
/(a^(5/2)*log(2)), -1/4*(3*b^2*arctan(a/(sqrt(-a)*sqrt((2^x*a - b
)/2^x))) - (2*2^(2*x)*a + 3*2^x*b)*sqrt(-a)*sqrt((2^x*a - b)/2^x)
)/(sqrt(-a)*a^2*log(2))]
```

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

$$\int \frac{2^{2x}}{\sqrt{a-2^{-x}b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(2*x)/(a-b/(2**x))**(1/2),x)
```

```
[Out] Integral(2**(2*x)/sqrt(a - 2**(-x)*b), x)
```

GIAC/XCAS [A] time = 0.298443, size = 135, normalized size = 1.41

$$\frac{2\sqrt{2^{2x}a-2^{x}b}\left(\frac{2\cdot 2^{x}}{a}+\frac{3b}{a^{2}}\right)+\frac{3b^{2}\ln\left(\sqrt{a}|b|\right)}{a^{\frac{5}{2}}}-\frac{3b^{2}\ln\left(\left|-2\left(2^{x}\sqrt{a}-\sqrt{2^{2x}a-2^{x}b}\right)a+\sqrt{a}b\right|\right)}{a^{\frac{5}{2}}}}{8\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^(2*x)/sqrt(a - b/2^x),x, algorithm="giac")
```

```
[Out] 1/8*(2*sqrt(2^(2*x)*a - 2^x*b)*(2*2^x/a + 3*b/a^2) + 3*b^2*ln(sqr
t(a)*abs(b))/a^(5/2) - 3*b^2*ln(abs(-2*(2^x*sqrt(a) - sqrt(2^(2*x
)*a - 2^x*b))*a + sqrt(a)*b))/a^(5/2))/ln(2)
```

3.505 $\int \frac{1}{1+2e^x+e^{2x}}\,dx$

Optimal. Leaf size=17

$$x+\frac{1}{e^x+1}-\log\left(e^x+1\right)$$

```
[Out] (1 + E^x)^(-1) + x - Log[1 + E^x]
```

Rubi [A] time = 0.0294842, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$x+\frac{1}{e^x+1}-\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + 2*E^x + E^(2*x))^(-1),x]
```

```
[Out] (1 + E^x)^(-1) + x - Log[1 + E^x]
```

Rubi in Sympy [A] time = 7.38376, size = 17, normalized size = 1.

$$-\log\left(e^x+1\right)+\log\left(e^x\right)+\frac{1}{e^x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] -log(exp(x) + 1) + log(exp(x)) + 1/(exp(x) + 1)
```

Mathematica [A] time = 0.0167562, size = 17, normalized size = 1.

$$x+\frac{1}{e^x+1}-\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + 2*E^x + E^(2*x))^(-1),x]
```

```
[Out] (1 + E^x)^(-1) + x - Log[1 + E^x]
```

Maple [A] time = 0.013, size = 18, normalized size = 1.1

$$(1+e^x)^{-1}-\ln\left(1+e^x\right)+\ln\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] 1/(1+exp(x))-ln(1+exp(x))+ln(exp(x))
```

Maxima [A] time = 0.780711, size = 20, normalized size = 1.18

$$x + \frac{1}{e^x + 1} - \log(e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 2*e^x + 1),x, algorithm="maxima")
```

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

Fricas [A] time = 0.246991, size = 34, normalized size = 2.

$$\frac{xe^x - (e^x + 1)\log(e^x + 1) + x + 1}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 2*e^x + 1),x, algorithm="fricas")
```

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

Sympy [A] time = 0.065228, size = 14, normalized size = 0.82

$$x - \log(e^x + 1) + \frac{1}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] x - log(exp(x) + 1) + 1/(exp(x) + 1)
```

GIAC/XCAS [A] time = 0.237677, size = 20, normalized size = 1.18

$$x + \frac{1}{e^x + 1} - \ln(e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 2*e^x + 1),x, algorithm="giac")
```

```
[Out] x + 1/(e^x + 1) - ln(e^x + 1)
```

3.506 $\int \frac{1}{2+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=24

$$\frac{x}{2}-\log\left(e^x+1\right)+\frac{1}{2}\log\left(e^x+2\right)$$

```
[Out] x/2 - Log[1 + E^x] + Log[2 + E^x]/2
```

Rubi [A] time = 0.0411508, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357

$$\frac{x}{2}-\log\left(e^x+1\right)+\frac{1}{2}\log\left(e^x+2\right)$$

Antiderivative was successfully verified.

```
[In] Int[(2 + 3*E^x + E^(2*x))^(-1),x]
```

```
[Out] x/2 - Log[1 + E^x] + Log[2 + E^x]/2
```

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

$$\int \frac{1}{e^{2x}+3e^x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(1/(exp(2*x) + 3*exp(x) + 2), x)
```

Mathematica [A] time = 0.00905584, size = 24, normalized size = 1.

$$\frac{x}{2}-\log\left(e^x+1\right)+\frac{1}{2}\log\left(e^x+2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 + 3*E^x + E^(2*x))^(-1),x]
```

```
[Out] x/2 - Log[1 + E^x] + Log[2 + E^x]/2
```

Maple [A] time = 0.012, size = 21, normalized size = 0.9

$$-\ln\left(1+e^x\right)+\frac{\ln\left(2+e^x\right)}{2}+\frac{\ln\left(e^x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] -ln(1+exp(x))+1/2*ln(2+exp(x))+1/2*ln(exp(x))
```

Maxima [A] time = 0.811775, size = 24, normalized size = 1.

$$\frac{1}{2}x + \frac{1}{2}\log\left(e^x + 2\right) - \log\left(e^x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 3*e^x + 2),x, algorithm="maxima")

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

Fricas [A] time = 0.269245, size = 24, normalized size = 1.

$$\frac{1}{2}x + \frac{1}{2}\log\left(e^x + 2\right) - \log\left(e^x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 3*e^x + 2),x, algorithm="fricas")

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

Sympy [A] time = 0.106369, size = 17, normalized size = 0.71

$$\frac{x}{2} - \log\left(e^x + 1\right) + \frac{\log\left(e^x + 2\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2+3*exp(x)+exp(2*x)),x)

[Out] x/2 - log(exp(x) + 1) + log(exp(x) + 2)/2
```

GIAC/XCAS [A] time = 0.273598, size = 24, normalized size = 1.

$$\frac{1}{2}x + \frac{1}{2}\ln\left(e^x + 2\right) - \ln\left(e^x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 3*e^x + 2),x, algorithm="giac")

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

3.507 $\int \frac{1}{-1+e^x+e^{2x}}\,dx$

Optimal. Leaf size=56

$$-x+\frac{1}{10}\left(5+\sqrt{5}\right)\log\left(2e^x+1-\sqrt{5}\right)+\frac{1}{10}\left(5-\sqrt{5}\right)\log\left(2e^x+1+\sqrt{5}\right)$$

```
[Out] -x + ((5 + Sqrt[5])*Log[1 - Sqrt[5] + 2*E^x])/10 + ((5 - Sqrt[5])
*Log[1 + Sqrt[5] + 2*E^x])/10
```

Rubi [A] time = 0.0681013, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417

$$-x+\frac{1}{10}\left(5+\sqrt{5}\right)\log\left(2e^x+1-\sqrt{5}\right)+\frac{1}{10}\left(5-\sqrt{5}\right)\log\left(2e^x+1+\sqrt{5}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(-1 + E^x + E^(2*x))^(-1),x]
```

```
[Out] -x + ((5 + Sqrt[5])*Log[1 - Sqrt[5] + 2*E^x])/10 + ((5 - Sqrt[5])
*Log[1 + Sqrt[5] + 2*E^x])/10
```

Rubi in Sympy [A] time = 8.97086, size = 65, normalized size = 1.16

$$-\frac{\sqrt{5}\left(-\frac{\sqrt{5}}{2}+\frac{1}{2}\right)\log\left(2e^x+1+\sqrt{5}\right)}{5}+\frac{\sqrt{5}\left(\frac{1}{2}+\frac{\sqrt{5}}{2}\right)\log\left(2e^x-\sqrt{5}+1\right)}{5}-\log\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] -sqrt(5)*(-sqrt(5)/2 + 1/2)*log(2*exp(x) + 1 + sqrt(5))/5 + sqrt(
5)*(1/2 + sqrt(5)/2)*log(2*exp(x) - sqrt(5) + 1)/5 - log(exp(x))
```

Mathematica [A] time = 0.0719786, size = 44, normalized size = 0.79

$$-x+\frac{1}{2}\log\left(-e^x-e^{2x}+1\right)-\frac{\tanh^{-1}\left(\frac{2e^x+1}{\sqrt{5}}\right)}{\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-1 + E^x + E^(2*x))^(-1),x]
```

```
[Out] -x - ArcTanh[(1 + 2*E^x)/Sqrt[5]]/Sqrt[5] + Log[1 - E^x - E^(2*x)
]/2
```

Maple [A] time = 0.009, size = 35, normalized size = 0.6

$$\frac{\ln\left(-1+e^x+\left(e^x\right)^2\right)}{2}-\frac{\sqrt{5}}{5}Artanh\left(\frac{\left(1+2\,e^x\right)\sqrt{5}}{5}\right)-\ln\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] 1/2*ln(-1+exp(x)+exp(x)^2)-1/5*5^(1/2)*arctanh(1/5*(1+2*exp(x))*5
^(1/2))-ln(exp(x))
```

Maxima [A] time = 0.849671, size = 58, normalized size = 1.04

$$\frac{1}{10}\,\sqrt{5}\log\left(-\frac{\sqrt{5}-2\,e^{x}-1}{\sqrt{5}+2\,e^{x}+1}\right)-x+\frac{1}{2}\,\log\left(e^{(2\,x)}+e^{x}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + e^x - 1),x, algorithm="maxima")
```

```
[Out] 1/10*sqrt(5)*log(-(sqrt(5) - 2*e^x - 1)/(sqrt(5) + 2*e^x + 1)) -
x + 1/2*log(e^(2*x) + e^x - 1)
```

Fricas [A] time = 0.274001, size = 88, normalized size = 1.57

$$-\frac{1}{10}\,\sqrt{5}\left(2\,\sqrt{5}x-\sqrt{5}\log\left(e^{(2\,x)}+e^{x}-1\right)-\log\left(\frac{2\left(\sqrt{5}-5\right)e^{x}+2\,\sqrt{5}e^{(2\,x)}+3\,\sqrt{5}-5}{e^{(2\,x)}+e^{x}-1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + e^x - 1),x, algorithm="fricas")
```

```
[Out] -1/10*sqrt(5)*(2*sqrt(5)*x - sqrt(5)*log(e^(2*x) + e^x - 1) - log
((2*(sqrt(5) - 5)*e^x + 2*sqrt(5)*e^(2*x) + 3*sqrt(5) - 5)/(e^(2*
x) + e^x - 1)))
```

Sympy [A] time = 0.129005, size = 22, normalized size = 0.39

$$-x+\mathrm{RootSum}\left(5z^{2}-5z+1,\left(i\mapsto i\log\left(-5i+e^{x}+3\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] -x + RootSum(5*_z**2 - 5*_z + 1, Lambda(_i, _i*log(-5*_i + exp(x)
 + 3)))
```

GIAC/XCAS [A] time = 0.256165, size = 62, normalized size = 1.11

$$\frac{1}{10}\,\sqrt{5}\ln\left(\frac{\left|-\sqrt{5}+2\,e^{x}+1\right|}{\sqrt{5}+2\,e^{x}+1}\right)-x+\frac{1}{2}\,\ln\left(\left|e^{(2\,x)}+e^{x}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + e^x - 1),x, algorithm="giac")
```

```
[Out] 1/10*sqrt(5)*ln(abs(-sqrt(5) + 2*e^x + 1)/(sqrt(5) + 2*e^x + 1))
- x + 1/2*ln(abs(e^(2*x) + e^x - 1))
```

3.508 $\int \frac{1}{3+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=44

$$\frac{x}{3}-\frac{1}{6}\log\left(3e^x+e^{2x}+3\right)-\frac{\tan^{-1}\left(\frac{2e^x+3}{\sqrt{3}}\right)}{\sqrt{3}}$$

```
[Out] x/3 - ArcTan[(3 + 2*E^x)/Sqrt[3]]/Sqrt[3] - Log[3 + 3*E^x + E^(2*
x)]/6
```

Rubi [A] time = 0.0706599, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5

$$\frac{x}{3}-\frac{1}{6}\log\left(3e^x+e^{2x}+3\right)-\frac{\tan^{-1}\left(\frac{2e^x+3}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(3 + 3*E^x + E^(2*x))^(-1),x]
```

```
[Out] x/3 - ArcTan[(3 + 2*E^x)/Sqrt[3]]/Sqrt[3] - Log[3 + 3*E^x + E^(2*
x)]/6
```

Rubi in Sympy [A] time = 10.4803, size = 42, normalized size = 0.95

$$-\frac{\log\left(e^{2x}+3e^x+3\right)}{6}+\frac{\log\left(e^x\right)}{3}-\frac{\sqrt{3}\operatorname{atan}\left(\sqrt{3}\left(\frac{2e^x}{3}+1\right)\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] -log(exp(2*x) + 3*exp(x) + 3)/6 + log(exp(x))/3 - sqrt(3)*atan(sq
rt(3)*(2*exp(x)/3 + 1))/3
```

Mathematica [A] time = 0.0520024, size = 44, normalized size = 1.

$$\frac{x}{3}-\frac{1}{6}\log\left(3e^x+e^{2x}+3\right)-\frac{\tan^{-1}\left(\frac{2e^x+3}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(3 + 3*E^x + E^(2*x))^(-1),x]
```

```
[Out] x/3 - ArcTan[(3 + 2*E^x)/Sqrt[3]]/Sqrt[3] - Log[3 + 3*E^x + E^(2*
x)]/6
```

Maple [A] time = 0.009, size = 37, normalized size = 0.8

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] 1/3*ln(exp(x))-1/6*ln(3+3*exp(x)+exp(x)^2)-1/3*arctan(1/3*(3+2*ex
p(x))*3^(1/2))*3^(1/2)
```

Maxima [A] time = 0.856124, size = 46, normalized size = 1.05

$$-\frac{1}{3}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}(2e^{x}+3)\right)+\frac{1}{3}x-\frac{1}{6}\log\left(e^{(2x)}+3e^{x}+3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 3*e^x + 3),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(3)*arctan(1/3*sqrt(3)*(2*e^x + 3)) + 1/3*x - 1/6*log(e^
(2*x) + 3*e^x + 3)
```

Fricas [A] time = 0.293075, size = 57, normalized size = 1.3

$$\frac{1}{18}\sqrt{3}\left(2\sqrt{3}x-\sqrt{3}\log\left(e^{(2x)}+3e^{x}+3\right)-6\arctan\left(\frac{2}{3}\sqrt{3}e^{x}+\sqrt{3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 3*e^x + 3),x, algorithm="fricas")
```

```
[Out] 1/18*sqrt(3)*(2*sqrt(3)*x - sqrt(3)*log(e^(2*x) + 3*e^x + 3) - 6*
arctan(2/3*sqrt(3)*e^x + sqrt(3)))
```

Sympy [A] time = 0.128036, size = 24, normalized size = 0.55

$$\frac{x}{3}+\operatorname{RootSum}\left(9z^{2}+3z+1,\left(i\mapsto i\log\left(-3i+e^{x}+1\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] x/3 + RootSum(9*_z**2 + 3*_z + 1, Lambda(_i, _i*log(-3*_i + exp(x
) + 1)))
```

GIAC/XCAS [A] time = 0.251116, size = 46, normalized size = 1.05

$$-\frac{1}{3}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}(2e^{x}+3)\right)+\frac{1}{3}x-\frac{1}{6}\ln\left(e^{(2x)}+3e^{x}+3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) + 3*e^x + 3),x, algorithm="giac")
```

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

3.509 $\int \frac{1}{a+be^x+ce^{2x}}\,dx$

Optimal. Leaf size=67

$$\frac{b\tanh^{-1}\left(\frac{b+2ce^x}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}-\frac{\log\left(a+be^x+ce^{2x}\right)}{2a}+\frac{x}{a}$$

```
[Out] x/a + (b*ArcTanh[(b + 2*c*E^x)/Sqrt[b^2 - 4*a*c]])/(a*Sqrt[b^2 -
4*a*c]) - Log[a + b*E^x + c*E^(2*x)]/(2*a)
```

Rubi [A] time = 0.116042, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438

$$\frac{b\tanh^{-1}\left(\frac{b+2ce^x}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}-\frac{\log\left(a+be^x+ce^{2x}\right)}{2a}+\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*E^x + c*E^(2*x))^(-1),x]
```

```
[Out] x/a + (b*ArcTanh[(b + 2*c*E^x)/Sqrt[b^2 - 4*a*c]])/(a*Sqrt[b^2 -
4*a*c]) - Log[a + b*E^x + c*E^(2*x)]/(2*a)
```

Rubi in Sympy [A] time = 21.9919, size = 61, normalized size = 0.91

$$\frac{b\,\text{atanh}\left(\frac{b+2ce^x}{\sqrt{-4ac+b^2}}\right)}{a\sqrt{-4ac+b^2}}-\frac{\log\left(a+be^x+ce^{2x}\right)}{2a}+\frac{\log\left(e^x\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] b*atanh((b + 2*c*exp(x))/sqrt(-4*a*c + b**2))/(a*sqrt(-4*a*c + b*
*2)) - log(a + b*exp(x) + c*exp(2*x))/(2*a) + log(exp(x))/a
```

Mathematica [A] time = 0.19157, size = 66, normalized size = 0.99

$$-\frac{\frac{2b\tan^{-1}\left(\frac{b+2ce^x}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\log\left(a+e^x\left(b+ce^x\right)\right)-2x}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*E^x + c*E^(2*x))^(-1),x]
```

```
[Out] -(-2*x + (2*b*ArcTan[(b + 2*c*E^x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2
 + 4*a*c] + Log[a + E^x*(b + c*E^x)])/(2*a)
```

Maple [A] time = 0.014, size = 66, normalized size = 1.

$$\frac{\ln\left(e^x\right)}{a}-\frac{\ln\left(a+be^x+c\left(e^x\right)^2\right)}{2a}-\frac{b}{a}\arctan\left(\left(b+2\,ce^x\right)\frac{1}{\sqrt{4\,ac-b^2}}\right)\frac{1}{\sqrt{4\,ac-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] 1/a*ln(exp(x))-1/2/a*ln(a+b*exp(x)+c*exp(x)^2)-1/a*b/(4*a*c-b^2)^
(1/2)*arctan((b+2*c*exp(x))/(4*a*c-b^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c*e^(2*x) + b*e^x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.288716, size = 1, normalized size = 0.01

$$\left[\frac{b \log\left(\frac{b^{3}-4 \, abc+2 \, (b^{2} c-4 \, ac^{2}) e^{x}+\left(2 \, c^{2} e^{(2 \, x)}+2 \, bce^{x}+b^{2}-2 \, ac\right) \sqrt{b^{2}-4 \, ac}}{ce^{(2 \, x)}+be^{x}+a}\right) + 2 \, \sqrt{b^{2} - 4 \, ac} x - \sqrt{b^{2} - 4 \, ac} \log\left(ce^{(2 \, x)} + be^{x} + a\right)}{2 \, \sqrt{b^{2} - 4 \, ac} a}, -\frac{2 \, b \arctan\left(-\frac{\sqrt{-b^{2}+4 \, ac} (2 \, ce^{x}+b)}{b^{2}-4 \, ac}\right) - 2 \, \sqrt{-b^{2} + 4 \, ac} x + \sqrt{-b^{2} + 4 \, ac} \log\left(ce^{(2 \, x)} + be^{x} + a\right)}{2 \, \sqrt{-b^{2} + 4 \, ac} a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c*e^(2*x) + b*e^x + a),x, algorithm="fricas")
```

```
[Out] [1/2*(b*log((b^3 - 4*a*b*c + 2*(b^2*c - 4*a*c^2)*e^x + (2*c^2*e^(
2*x) + 2*b*c*e^x + b^2 - 2*a*c)*sqrt(b^2 - 4*a*c))/(c*e^(2*x) + b
*e^x + a)) + 2*sqrt(b^2 - 4*a*c)*x - sqrt(b^2 - 4*a*c)*log(c*e^(2
*x) + b*e^x + a))/(sqrt(b^2 - 4*a*c)*a), -1/2*(2*b*arctan(-sqrt(-
b^2 + 4*a*c)*(2*c*e^x + b)/(b^2 - 4*a*c)) - 2*sqrt(-b^2 + 4*a*c)*
x + sqrt(-b^2 + 4*a*c)*log(c*e^(2*x) + b*e^x + a))/(sqrt(-b^2 + 4
*a*c)*a)]
```

Sympy [A] time = 0.595642, size = 63, normalized size = 0.94

$$\operatorname{RootSum}\left(z^{2} \left(4a^{2}c - ab^{2}\right) + z \left(4ac - b^{2}\right) + c, \left(i \mapsto i \log\left(e^{x} + \frac{-4ia^{2}c + iab^{2} - 2ac + b^{2}}{bc}\right)\right)\right) + \frac{x}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] RootSum(_z**2*(4*a**2*c - a*b**2) + _z*(4*a*c - b**2) + c, Lambda
(_i, _i*log(exp(x) + (-4*_i*a**2*c + _i*a*b**2 - 2*a*c + b**2)/(b
*c)))) + x/a
```

GIAC/XCAS [A] time = 0.354289, size = 85, normalized size = 1.27

$$-\frac{b \arctan\left(\frac{2 \, c e^{x} + b}{\sqrt{-b^{2} + 4 \, a c}}\right)}{\sqrt{-b^{2} + 4 \, a c} a} + \frac{x}{a} - \frac{\ln\left(c e^{\left(2 \, x\right)} + b e^{x} + a\right)}{2 \, a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c*e^(2*x) + b*e^x + a),x, algorithm="giac")
```

```
[Out] -b*arctan((2*c*e^x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*a
) + x/a - 1/2*ln(c*e^(2*x) + b*e^x + a)/a
```

3.510 $\int \frac{x}{1+2e^x+e^{2x}} \, dx$

Optimal. Leaf size=44

$$-\text{PolyLog}\left(2,-e^x\right)+\frac{x^2}{2}+\frac{x}{e^x+1}-x-x\log\left(e^x+1\right)+\log\left(e^x+1\right)$$

```
[Out] -x + x/(1 + E^x) + x^2/2 + Log[1 + E^x] - x*Log[1 + E^x] - PolyLo
g[2, -E^x]
```

Rubi [A] time = 0.191135, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.688

$$-\text{PolyLog}\left(2,-e^x\right)+\frac{x^2}{2}+\frac{x}{e^x+1}-x-x\log\left(e^x+1\right)+\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x/(1 + 2*E^x + E^(2*x)),x]
```

```
[Out] -x + x/(1 + E^x) + x^2/2 + Log[1 + E^x] - x*Log[1 + E^x] - PolyLo
g[2, -E^x]
```

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

$$\int \frac{x}{e^{2x}+2e^x+1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x/(exp(2*x) + 2*exp(x) + 1), x)
```

Mathematica [A] time = 0.0705569, size = 38, normalized size = 0.86

$$-\text{PolyLog}\left(2,-e^x\right)+\frac{1}{2}x\left(x+\frac{2}{e^x+1}-2\right)-(x-1)\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(1 + 2*E^x + E^(2*x)),x]
```

```
[Out] (x*(-2 + 2/(1 + E^x) + x))/2 - (-1 + x)*Log[1 + E^x] - PolyLog[2,
 -E^x]
```

Maple [C] time = 0.016, size = 38, normalized size = 0.9

$$\ln\left(1+e^x\right)-\frac{xe^x}{1+e^x}-dilog\left(1+e^x\right)-x\ln\left(1+e^x\right)+\frac{x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(1+2*exp(x)+exp(2*x)),x)

[Out] ln(1+exp(x))-x*exp(x)/(1+exp(x))-dilog(1+exp(x))-x*ln(1+exp(x))+1
/2*x^2
```

Maxima [A] time = 0.790441, size = 50, normalized size = 1.14

$$\frac{1}{2}x^2 - x\log\left(e^x + 1\right) - x + \frac{x}{e^x + 1} - \mathrm{Li}_2\left(-e^x\right) + \log\left(e^x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + 2*e^x + 1),x, algorithm="maxima")

[Out] 1/2*x^2 - x*log(e^x + 1) - x + x/(e^x + 1) - dilog(-e^x) + log(e^
x + 1)
```

Fricas [A] time = 0.264218, size = 66, normalized size = 1.5

$$\frac{x^2 - 2\left(e^x + 1\right)\mathrm{Li}_2\left(-e^x\right) + \left(x^2 - 2x\right)e^x - 2\left((x-1)e^x + x - 1\right)\log\left(e^x + 1\right)}{2\left(e^x + 1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + 2*e^x + 1),x, algorithm="fricas")

[Out] 1/2*(x^2 - 2*(e^x + 1)*dilog(-e^x) + (x^2 - 2*x)*e^x - 2*((x - 1)
*e^x + x - 1)*log(e^x + 1))/(e^x + 1)
```

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

$$\frac{x}{e^x + 1} + \int \frac{x - 1}{e^x + 1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(1+2*exp(x)+exp(2*x)),x)

[Out] x/(exp(x) + 1) + Integral((x - 1)/(exp(x) + 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{e^{(2x)} + 2e^x + 1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + 2*e^x + 1),x, algorithm="giac")

[Out] integrate(x/(e^(2*x) + 2*e^x + 1), x)
```

3.511 $\int \frac{x}{2+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=54

$$-\text{PolyLog}(2,-e^x)+\frac{1}{2}\text{PolyLog}\left(2,-\frac{e^x}{2}\right)+\frac{x^2}{4}+\frac{1}{2}x\log\left(\frac{e^x}{2}+1\right)-x\log(e^x+1)$$

```
[Out] x^2/4 + (x*Log[1 + E^x/2])/2 - x*Log[1 + E^x] - PolyLog[2, -E^x]
+ PolyLog[2, -E^x/2]/2
```

Rubi [A] time = 0.182251, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312

$$-\text{PolyLog}(2,-e^x)+\frac{1}{2}\text{PolyLog}\left(2,-\frac{e^x}{2}\right)+\frac{x^2}{4}+\frac{1}{2}x\log\left(\frac{e^x}{2}+1\right)-x\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In]  Int[x/(2 + 3*E^x + E^(2*x)),x]
```

```
[Out] x^2/4 + (x*Log[1 + E^x/2])/2 - x*Log[1 + E^x] - PolyLog[2, -E^x]
+ PolyLog[2, -E^x/2]/2
```

Rubi in Sympy [A] time = 17.3456, size = 39, normalized size = 0.72

$$-x\log(1+e^{-x})+\frac{x\log(1+2e^{-x})}{2}-\frac{\text{Li}_2(-2e^{-x})}{2}+\text{Li}_2(-e^{-x})$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] -x*log(1 + exp(-x)) + x*log(1 + 2*exp(-x))/2 - polylog(2, -2*exp(
-x))/2 + polylog(2, -exp(-x))
```

Mathematica [A] time = 0.0166551, size = 54, normalized size = 1.

$$-\text{PolyLog}(2,-e^x)+\frac{1}{2}\text{PolyLog}\left(2,-\frac{e^x}{2}\right)+\frac{x^2}{4}+\frac{1}{2}x\log\left(\frac{e^x}{2}+1\right)-x\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(2 + 3*E^x + E^(2*x)),x]
```

```
[Out] x^2/4 + (x*Log[1 + E^x/2])/2 - x*Log[1 + E^x] - PolyLog[2, -E^x]
+ PolyLog[2, -E^x/2]/2
```

Maple [A] time = 0.01, size = 41, normalized size = 0.8

$$\frac{x^2}{4}+\frac{x}{2}\ln\left(1+\frac{e^x}{2}\right)-x\ln(1+e^x)-\mathit{polylog}(2,-e^x)+\frac{1}{2}\mathit{polylog}\left(2,-\frac{e^x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] 1/4*x^2+1/2*x*ln(1+1/2*exp(x))-x*ln(1+exp(x))-polylog(2,-exp(x))+
1/2*polylog(2,-1/2*exp(x))
```

Maxima [A] time = 0.84587, size = 51, normalized size = 0.94

$$\frac{1}{4}x^2 - x\log\left(e^x + 1\right) + \frac{1}{2}x\log\left(\frac{1}{2}e^x + 1\right) + \frac{1}{2}\operatorname{Li}_2\left(-\frac{1}{2}e^x\right) - \operatorname{Li}_2\left(-e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x/(e^(2*x) + 3*e^x + 2),x, algorithm="maxima")
```

```
[Out] 1/4*x^2 - x*log(e^x + 1) + 1/2*x*log(1/2*e^x + 1) + 1/2*dilog(-1/
2*e^x) - dilog(-e^x)
```

Fricas [A] time = 0.250371, size = 51, normalized size = 0.94

$$\frac{1}{4}x^2 - x\log\left(e^x + 1\right) + \frac{1}{2}x\log\left(\frac{1}{2}e^x + 1\right) + \frac{1}{2}\operatorname{Li}_2\left(-\frac{1}{2}e^x\right) - \operatorname{Li}_2\left(-e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x/(e^(2*x) + 3*e^x + 2),x, algorithm="fricas")
```

```
[Out] 1/4*x^2 - x*log(e^x + 1) + 1/2*x*log(1/2*e^x + 1) + 1/2*dilog(-1/
2*e^x) - dilog(-e^x)
```

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

$$\int \frac{x}{\left(e^x + 1\right)\left(e^x + 2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x/((exp(x) + 1)*(exp(x) + 2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{e^{(2x)} + 3e^x + 2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x/(e^(2*x) + 3*e^x + 2),x, algorithm="giac")
```

```
[Out] integrate(x/(e^(2*x) + 3*e^x + 2), x)
```

3.512 $\int \frac{x}{-1+e^x+e^{2x}}\,dx$

Optimal. Leaf size=180

$$-\frac{2\mathrm{PolyLog}\left(2,-\frac{2e^x}{1-\sqrt{5}}\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{2\mathrm{PolyLog}\left(2,-\frac{2e^x}{1+\sqrt{5}}\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}-\frac{x^2}{\sqrt{5}\left(1+\sqrt{5}\right)}+\frac{x^2}{\sqrt{5}\left(1-\sqrt{5}\right)}-\frac{2x\log\left(\frac{2e^x}{1-\sqrt{5}}+1\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{2x\log\left(\frac{2e^x}{1+\sqrt{5}}+1\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}$$

```
[Out] x^2/(Sqrt[5]*(1 - Sqrt[5])) - x^2/(Sqrt[5]*(1 + Sqrt[5])) - (2*x*
Log[1 + (2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqrt[5])) + (2*x*Lo
g[1 + (2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + Sqrt[5])) - (2*PolyLo
g[2, (-2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqrt[5])) + (2*PolyLo
g[2, (-2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + Sqrt[5]))
```

Rubi [A] time = 0.296935, antiderivative size = 180, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357

$$-\frac{2\mathrm{PolyLog}\left(2,-\frac{2e^x}{1-\sqrt{5}}\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{2\mathrm{PolyLog}\left(2,-\frac{2e^x}{1+\sqrt{5}}\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}-\frac{x^2}{\sqrt{5}\left(1+\sqrt{5}\right)}+\frac{x^2}{\sqrt{5}\left(1-\sqrt{5}\right)}-\frac{2x\log\left(\frac{2e^x}{1-\sqrt{5}}+1\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{2x\log\left(\frac{2e^x}{1+\sqrt{5}}+1\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(-1 + E^x + E^(2*x)),x]
```

```
[Out] x^2/(Sqrt[5]*(1 - Sqrt[5])) - x^2/(Sqrt[5]*(1 + Sqrt[5])) - (2*x*
Log[1 + (2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqrt[5])) + (2*x*Lo
g[1 + (2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + Sqrt[5])) - (2*PolyLo
g[2, (-2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqrt[5])) + (2*PolyLo
g[2, (-2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + Sqrt[5]))
```

Rubi in Sympy [A] time = 18.7373, size = 129, normalized size = 0.72

$$\frac{2\sqrt{5}x\log\left(1+\left(\frac{1}{2}+\frac{\sqrt{5}}{2}\right)e^{-x}\right)}{5\left(1+\sqrt{5}\right)}-\frac{2\sqrt{5}x\log\left(1+\left(-\frac{\sqrt{5}}{2}+\frac{1}{2}\right)e^{-x}\right)}{5\left(-\sqrt{5}+1\right)}+\frac{2\sqrt{5}\,\mathrm{Li}_2\left(\left(-\frac{1}{2}+\frac{\sqrt{5}}{2}\right)e^{-x}\right)}{5\left(-\sqrt{5}+1\right)}-\frac{2\sqrt{5}\,\mathrm{Li}_2\left(\left(-\frac{\sqrt{5}}{2}-\frac{1}{2}\right)e^{-x}\right)}{5\left(1+\sqrt{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] 2*sqrt(5)*x*log(1 + (1/2 + sqrt(5)/2)*exp(-x))/(5*(1 + sqrt(5)))
- 2*sqrt(5)*x*log(1 + (-sqrt(5)/2 + 1/2)*exp(-x))/(5*(-sqrt(5) +
1)) + 2*sqrt(5)*polylog(2, (-1/2 + sqrt(5)/2)*exp(-x))/(5*(-sqrt(
5) + 1)) - 2*sqrt(5)*polylog(2, (-sqrt(5)/2 - 1/2)*exp(-x))/(5*(1
 + sqrt(5)))
```

Mathematica [A] time = 0.286867, size = 119, normalized size = 0.66

$$\frac{\left(1+\sqrt{5}\right)\text{PolyLog}\left(2,\frac{2e^x}{\sqrt{5}-1}\right)+\left(\sqrt{5}-1\right)\text{PolyLog}\left(2,-\frac{2e^x}{1+\sqrt{5}}\right)+x\left(-\sqrt{5}x+\left(1+\sqrt{5}\right)\log\left(1-\frac{2e^x}{\sqrt{5}-1}\right)+\left(\sqrt{5}-1\right)\log\left(\frac{2e^x}{1+\sqrt{5}}\right.\right.}{2\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(-1 + E^x + E^(2*x)),x]
```

```
[Out] (x*(-(Sqrt[5]*x) + (1 + Sqrt[5])*Log[1 - (2*E^x)/(-1 + Sqrt[5])]
+ (-1 + Sqrt[5])*Log[1 + (2*E^x)/(1 + Sqrt[5])]) + (1 + Sqrt[5])*
PolyLog[2, (2*E^x)/(-1 + Sqrt[5])] + (-1 + Sqrt[5])*PolyLog[2, (-
2*E^x)/(1 + Sqrt[5])])/(2*Sqrt[5])
```

Maple [C] time = 0.018, size = 183, normalized size = 1.

$$\frac{\sqrt{5}x}{10}\ln\left(\frac{\sqrt{5}-1-2\,\mathrm{e}^{x}}{\sqrt{5}-1}\right)+\frac{x}{2}\ln\left(\frac{\sqrt{5}-1-2\,\mathrm{e}^{x}}{\sqrt{5}-1}\right)-\frac{\sqrt{5}x}{10}\ln\left(\frac{1+2\,\mathrm{e}^{x}+\sqrt{5}}{\sqrt{5}+1}\right)+\frac{x}{2}\ln\left(\frac{1+2\,\mathrm{e}^{x}+\sqrt{5}}{\sqrt{5}+1}\right)+\frac{\sqrt{5}}{10}\mathit{dilog}\left(\frac{\sqrt{5}-1-2\,\mathrm{e}^{x}}{\sqrt{5}-1}\right)+\frac{1}{2}\mathit{dilog}\left(\frac{\sqrt{5}-1-2\,\mathrm{e}^{x}}{\sqrt{5}-1}\right)-\frac{\sqrt{5}}{10}\mathit{dilog}\left(\frac{1+2\,\mathrm{e}^{x}+\sqrt{5}}{\sqrt{5}+1}\right)+\frac{1}{2}\mathit{dilog}\left(\frac{1+2\,\mathrm{e}^{x}+\sqrt{5}}{\sqrt{5}+1}\right)-\frac{x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] 1/10*5^(1/2)*x*ln((5^(1/2)-1-2*exp(x))/(5^(1/2)-1))+1/2*x*ln((5^(
1/2)-1-2*exp(x))/(5^(1/2)-1))-1/10*5^(1/2)*x*ln((1+2*exp(x)+5^(1/
2))/(5^(1/2)+1))+1/2*x*ln((1+2*exp(x)+5^(1/2))/(5^(1/2)+1))+1/10*
5^(1/2)*dilog((5^(1/2)-1-2*exp(x))/(5^(1/2)-1))+1/2*dilog((5^(1/2
)-1-2*exp(x))/(5^(1/2)-1))-1/10*5^(1/2)*dilog((1+2*exp(x)+5^(1/2)
)/(5^(1/2)+1))+1/2*dilog((1+2*exp(x)+5^(1/2))/(5^(1/2)+1))-1/2*x^
2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{e^{(2\,x)}+e^{x}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + e^x - 1),x, algorithm="maxima")
```

```
[Out] integrate(x/(e^(2*x) + e^x - 1), x)
```

Fricas [A] time = 0.256947, size = 162, normalized size = 0.9

$$-\frac{1}{2}x^{2}-\frac{1}{10}\left(\sqrt{5}-5\right){\rm Li}_2\left(-\frac{\sqrt{5}+2\,e^{x}+1}{\sqrt{5}+1}+1\right)+\frac{1}{10}\left(\sqrt{5}+5\right){\rm Li}_2\left(-\frac{\sqrt{5}-2\,e^{x}-1}{\sqrt{5}-1}+1\right)-\frac{1}{10}\left(\sqrt{5}x-5\,x\right)\log\left(\frac{\sqrt{5}+2\,e^{x}+1}{\sqrt{5}+1}\right)+\frac{1}{10}\left(\sqrt{5}x+5\,x\right)\log\left(\frac{\sqrt{5}-2\,e^{x}-1}{\sqrt{5}-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + e^x - 1),x, algorithm="fricas")
```

```
[Out] -1/2*x^2 - 1/10*(sqrt(5) - 5)*dilog(-(sqrt(5) + 2*e^x + 1)/(sqrt(
5) + 1) + 1) + 1/10*(sqrt(5) + 5)*dilog(-(sqrt(5) - 2*e^x - 1)/(s
qrt(5) - 1) + 1) - 1/10*(sqrt(5)*x - 5*x)*log((sqrt(5) + 2*e^x +
1)/(sqrt(5) + 1)) + 1/10*(sqrt(5)*x + 5*x)*log((sqrt(5) - 2*e^x -
 1)/(sqrt(5) - 1))
```

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

$$\int \frac{x}{e^{2x} + e^{x} - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x/(exp(2*x) + exp(x) - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{e^{(2\,x)} + e^{x} - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + e^x - 1),x, algorithm="giac")
```

```
[Out] integrate(x/(e^(2*x) + e^x - 1), x)
```

3.513 $\int \frac{x}{3+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=204

$$-\frac{2\text{PolyLog}\left(2,-\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{2\text{PolyLog}\left(2,-\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}+\frac{x^2}{\sqrt{3}\left(\sqrt{3}+3i\right)}-\frac{x^2}{\sqrt{3}\left(-\sqrt{3}+3i\right)}-\frac{2x\log\left(1+\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{2x\log\left(1+\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}$$

```
[Out] -(x^2/(Sqrt[3]*(3*I - Sqrt[3]))) + x^2/(Sqrt[3]*(3*I + Sqrt[3]))
- (2*x*Log[1 + (2*E^x)/(3 - I*Sqrt[3])])/(Sqrt[3]*(3*I + Sqrt[3])
) + (2*x*Log[1 + (2*E^x)/(3 + I*Sqrt[3])])/(Sqrt[3]*(3*I - Sqrt[3
])) - (2*PolyLog[2, (-2*E^x)/(3 - I*Sqrt[3])])/(Sqrt[3]*(3*I + Sq
rt[3])) + (2*PolyLog[2, (-2*E^x)/(3 + I*Sqrt[3])])/(Sqrt[3]*(3*I
- Sqrt[3]))
```

Rubi [A] time = 0.310751, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312

$$-\frac{2\text{PolyLog}\left(2,-\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{2\text{PolyLog}\left(2,-\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}+\frac{x^2}{\sqrt{3}\left(\sqrt{3}+3i\right)}-\frac{x^2}{\sqrt{3}\left(-\sqrt{3}+3i\right)}-\frac{2x\log\left(1+\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{2x\log\left(1+\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(3 + 3*E^x + E^(2*x)),x]
```

```
[Out] -(x^2/(Sqrt[3]*(3*I - Sqrt[3]))) + x^2/(Sqrt[3]*(3*I + Sqrt[3]))
- (2*x*Log[1 + (2*E^x)/(3 - I*Sqrt[3])])/(Sqrt[3]*(3*I + Sqrt[3])
) + (2*x*Log[1 + (2*E^x)/(3 + I*Sqrt[3])])/(Sqrt[3]*(3*I - Sqrt[3
])) - (2*PolyLog[2, (-2*E^x)/(3 - I*Sqrt[3])])/(Sqrt[3]*(3*I + Sq
rt[3])) + (2*PolyLog[2, (-2*E^x)/(3 + I*Sqrt[3])])/(Sqrt[3]*(3*I
- Sqrt[3]))
```

Rubi in Sympy [A] time = 26.7588, size = 122, normalized size = 0.6

$$-x\left(\frac{1}{6}-\frac{\sqrt{3}i}{6}\right)\log\left(1+\left(\frac{3}{2}-\frac{\sqrt{3}i}{2}\right)e^{-x}\right)-x\left(\frac{1}{6}+\frac{\sqrt{3}i}{6}\right)\log\left(1+\left(\frac{3}{2}+\frac{\sqrt{3}i}{2}\right)e^{-x}\right)+\left(\frac{1}{6}+\frac{\sqrt{3}i}{6}\right)\text{Li}_2\left(\left(-\frac{3}{2}-\frac{\sqrt{3}i}{2}\right)e^{-x}\right)+\left(\frac{1}{6}-\frac{\sqrt{3}i}{6}\right)\text{Li}_2\left(\left(-\frac{3}{2}+\frac{\sqrt{3}i}{2}\right)e^{-x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] -x*(1/6 - sqrt(3)*I/6)*log(1 + (3/2 - sqrt(3)*I/2)*exp(-x)) - x*(
1/6 + sqrt(3)*I/6)*log(1 + (3/2 + sqrt(3)*I/2)*exp(-x)) + (1/6 +
sqrt(3)*I/6)*polylog(2, (-3/2 - sqrt(3)*I/2)*exp(-x)) + (1/6 - sq
rt(3)*I/6)*polylog(2, (-3/2 + sqrt(3)*I/2)*exp(-x))
```

Mathematica [A] time = 0.166773, size = 146, normalized size = 0.72

$$\frac{-\left(\sqrt{3}-3i\right)\text{PolyLog}\left(2,\frac{2e^x}{-3+i\sqrt{3}}\right)-\left(\sqrt{3}+3i\right)\text{PolyLog}\left(2,-\frac{2e^x}{3+i\sqrt{3}}\right)+x\left(\sqrt{3}x-\left(\sqrt{3}+3i\right)\log\left(1+\frac{2e^x}{3+i\sqrt{3}}\right)-\left(\sqrt{3}-3i\right)\log\right.}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(3 + 3*E^x + E^(2*x)),x]
```

```
[Out] (x*(Sqrt[3]*x - (3*I + Sqrt[3])*Log[1 + (2*E^x)/(3 + I*Sqrt[3])]
- (-3*I + Sqrt[3])*Log[1 + ((2*I)*E^x)/(3*I + Sqrt[3])]) - (-3*I
+ Sqrt[3])*PolyLog[2, (2*E^x)/(-3 + I*Sqrt[3])] - (3*I + Sqrt[3])
*PolyLog[2, (-2*E^x)/(3 + I*Sqrt[3])])/(6*Sqrt[3])
```

Maple [C] time = 0.016, size = 235, normalized size = 1.2

$$\frac{x^2}{6}+\frac{i}{6}\sqrt{3}x\ln\left(\frac{i\sqrt{3}-2\,\mathrm{e}^x-3}{-3+i\sqrt{3}}\right)-\frac{x}{6}\ln\left(\frac{i\sqrt{3}-2\,\mathrm{e}^x-3}{-3+i\sqrt{3}}\right)-\frac{i}{6}\sqrt{3}x\ln\left(\frac{i\sqrt{3}+2\,\mathrm{e}^x+3}{3+i\sqrt{3}}\right)$$
$$-\frac{x}{6}\ln\left(\frac{i\sqrt{3}+2\,\mathrm{e}^x+3}{3+i\sqrt{3}}\right)+\frac{i}{6}\sqrt{3}\mathit{dilog}\left(\frac{i\sqrt{3}-2\,\mathrm{e}^x-3}{-3+i\sqrt{3}}\right)-\frac{1}{6}\mathit{dilog}\left(\frac{i\sqrt{3}-2\,\mathrm{e}^x-3}{-3+i\sqrt{3}}\right)$$
$$-\frac{i}{6}\sqrt{3}\mathit{dilog}\left(\frac{i\sqrt{3}+2\,\mathrm{e}^x+3}{3+i\sqrt{3}}\right)-\frac{1}{6}\mathit{dilog}\left(\frac{i\sqrt{3}+2\,\mathrm{e}^x+3}{3+i\sqrt{3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] 1/6*x^2+1/6*I*3^(1/2)*x*ln((I*3^(1/2)-2*exp(x)-3)/(-3+I*3^(1/2)))
-1/6*x*ln((I*3^(1/2)-2*exp(x)-3)/(-3+I*3^(1/2)))-1/6*I*3^(1/2)*x*
ln((I*3^(1/2)+2*exp(x)+3)/(3+I*3^(1/2)))-1/6*x*ln((I*3^(1/2)+2*ex
p(x)+3)/(3+I*3^(1/2)))+1/6*I*3^(1/2)*dilog((I*3^(1/2)-2*exp(x)-3)
/(-3+I*3^(1/2)))-1/6*dilog((I*3^(1/2)-2*exp(x)-3)/(-3+I*3^(1/2)))
-1/6*I*3^(1/2)*dilog((I*3^(1/2)+2*exp(x)+3)/(3+I*3^(1/2)))-1/6*di
log((I*3^(1/2)+2*exp(x)+3)/(3+I*3^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{e^{(2\,x)}+3\,e^x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + 3*e^x + 3),x, algorithm="maxima")
```

```
[Out] integrate(x/(e^(2*x) + 3*e^x + 3), x)
```

Fricas [A] time = 0.267371, size = 208, normalized size = 1.02

$$\frac{1}{6}x^2+\frac{1}{6}\left(-i\sqrt{3}-1\right)\mathrm{Li}_2\left(-\frac{2\sqrt{3}e^x+3\sqrt{3}+3i}{3\sqrt{3}+3i}+1\right)+\frac{1}{6}\left(i\sqrt{3}-1\right)\mathrm{Li}_2\left(-\frac{2\sqrt{3}e^x+3\sqrt{3}-3i}{3\sqrt{3}-3i}+1\right)$$
$$+\frac{1}{6}\left(-i\sqrt{3}x-x\right)\log\left(\frac{2\sqrt{3}e^x+3\sqrt{3}+3i}{3\sqrt{3}+3i}\right)+\frac{1}{6}\left(i\sqrt{3}x-x\right)\log\left(\frac{2\sqrt{3}e^x+3\sqrt{3}-3i}{3\sqrt{3}-3i}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + 3*e^x + 3),x, algorithm="fricas")
```

```
[Out] 1/6*x^2 + 1/6*(-I*sqrt(3) - 1)*dilog(-(2*sqrt(3)*e^x + 3*sqrt(3)
+ 3*I)/(3*sqrt(3) + 3*I) + 1) + 1/6*(I*sqrt(3) - 1)*dilog(-(2*sqr
t(3)*e^x + 3*sqrt(3) - 3*I)/(3*sqrt(3) - 3*I) + 1) + 1/6*(-I*sqrt
(3)*x - x)*log((2*sqrt(3)*e^x + 3*sqrt(3) + 3*I)/(3*sqrt(3) + 3*I
)) + 1/6*(I*sqrt(3)*x - x)*log((2*sqrt(3)*e^x + 3*sqrt(3) - 3*I)/
(3*sqrt(3) - 3*I))
```

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

$$\int \frac{x}{e^{2x} + 3e^{x} + 3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x/(exp(2*x) + 3*exp(x) + 3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{e^{(2x)} + 3e^{x} + 3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(2*x) + 3*e^x + 3),x, algorithm="giac")
```

```
[Out] integrate(x/(e^(2*x) + 3*e^x + 3), x)
```

3.514 $\int \frac{x}{a+be^x+ce^{2x}}\,dx$

Optimal. Leaf size=276

$$\frac{2c\text{PolyLog}\left(2,-\frac{2ce^x}{b-\sqrt{b^2-4ac}}\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2c\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)}{b\sqrt{b^2-4ac}-4ac+b^2}-\frac{cx^2}{-b\sqrt{b^2-4ac}-4ac+b^2}-\frac{cx^2}{b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2cx\log\left(\frac{2ce^x}{b-\sqrt{b^2-4ac}}+1\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2cx\log\left(\frac{2ce^x}{\sqrt{b^2-4ac}+b}+1\right)}{b\sqrt{b^2-4ac}-4ac+b^2}$$

```
[Out] -((c*x^2)/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (c*x^2)/(b^2 - 4
*a*c + b*Sqrt[b^2 - 4*a*c]) + (2*c*x*Log[1 + (2*c*E^x)/(b - Sqrt[
b^2 - 4*a*c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) + (2*c*x*Log[
1 + (2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqrt[b^2
 - 4*a*c]) + (2*c*PolyLog[2, (-2*c*E^x)/(b - Sqrt[b^2 - 4*a*c])])
/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) + (2*c*PolyLog[2, (-2*c*E^x)
/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c])
```

Rubi [A] time = 0.707755, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278

$$\frac{2c\text{PolyLog}\left(2,-\frac{2ce^x}{b-\sqrt{b^2-4ac}}\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2c\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)}{b\sqrt{b^2-4ac}-4ac+b^2}-\frac{cx^2}{-b\sqrt{b^2-4ac}-4ac+b^2}-\frac{cx^2}{b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2cx\log\left(\frac{2ce^x}{b-\sqrt{b^2-4ac}}+1\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2cx\log\left(\frac{2ce^x}{\sqrt{b^2-4ac}+b}+1\right)}{b\sqrt{b^2-4ac}-4ac+b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*E^x + c*E^(2*x)),x]
```

```
[Out] -((c*x^2)/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (c*x^2)/(b^2 - 4
*a*c + b*Sqrt[b^2 - 4*a*c]) + (2*c*x*Log[1 + (2*c*E^x)/(b - Sqrt[
b^2 - 4*a*c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) + (2*c*x*Log[
1 + (2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqrt[b^2
 - 4*a*c]) + (2*c*PolyLog[2, (-2*c*E^x)/(b - Sqrt[b^2 - 4*a*c])])
/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) + (2*c*PolyLog[2, (-2*c*E^x)
/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c])
```

Rubi in Sympy [A] time = 34.0434, size = 199, normalized size = 0.72

$$\frac{2cx\log\left(1+\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2+b\sqrt{-4ac+b^2}}+\frac{2cx\log\left(1+\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2-b\sqrt{-4ac+b^2}}-\frac{2c\,\text{Li}_2\left(-\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2+b\sqrt{-4ac+b^2}}-\frac{2c\,\text{Li}_2\left(-\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2-b\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] 2*c*x*log(1 + (b + sqrt(-4*a*c + b**2))*exp(-x)/(2*c))/(-4*a*c +
b**2 + b*sqrt(-4*a*c + b**2)) + 2*c*x*log(1 + (b - sqrt(-4*a*c +
b**2))*exp(-x)/(2*c))/(-4*a*c + b**2 - b*sqrt(-4*a*c + b**2)) - 2
*c*polylog(2, -(b + sqrt(-4*a*c + b**2))*exp(-x)/(2*c))/(-4*a*c +
```

```
b**2 + b*sqrt(-4*a*c + b**2)) - 2*c*polylog(2, -(b - sqrt(-4*a*c
+ b**2))*exp(-x)/(2*c))/(-4*a*c + b**2 - b*sqrt(-4*a*c + b**2))
```

Mathematica [A] time = 0.322502, size = 205, normalized size = 0.74

$$\frac{-\left(\sqrt{b^2-4ac}+b\right)\text{PolyLog}\left(2,\frac{2ce^x}{\sqrt{b^2-4ac}-b}\right)+\left(b-\sqrt{b^2-4ac}\right)\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)+x\left(x\sqrt{b^2-4ac}-\left(\sqrt{b^2-4ac}+b\right)\right.}{2a\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*E^x + c*E^(2*x)),x]
```

```
[Out] (x*(Sqrt[b^2 - 4*a*c]*x - (b + Sqrt[b^2 - 4*a*c])*Log[1 + (2*c*E^
x)/(b - Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*a*c])*Log[1 + (2*
c*E^x)/(b + Sqrt[b^2 - 4*a*c])]) - (b + Sqrt[b^2 - 4*a*c])*PolyLo
g[2, (2*c*E^x)/(-b + Sqrt[b^2 - 4*a*c])] + (b - Sqrt[b^2 - 4*a*c]
)*PolyLog[2, (-2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(2*a*Sqrt[b^2 -
 4*a*c])
```

Maple [C] time = 0.022, size = 378, normalized size = 1.4

$$\begin{aligned}
&\frac{x^2}{2\,a}-\frac{x}{2\,a}\ln\left(1\left(-2\,ce^x+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\\
&-\frac{bx}{2\,a}\ln\left(1\left(-2\,ce^x+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\frac{1}{\sqrt{-4\,ac+b^2}}\\
&-\frac{x}{2\,a}\ln\left(1\left(2\,ce^x+\sqrt{-4\,ac+b^2}+b\right)\left(b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\\
&+\frac{bx}{2\,a}\ln\left(1\left(2\,ce^x+\sqrt{-4\,ac+b^2}+b\right)\left(b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\frac{1}{\sqrt{-4\,ac+b^2}}\\
&-\frac{1}{2\,a}dilog\left(1\left(2\,ce^x+\sqrt{-4\,ac+b^2}+b\right)\left(b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\\
&+\frac{b}{2\,a}dilog\left(1\left(2\,ce^x+\sqrt{-4\,ac+b^2}+b\right)\left(b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\frac{1}{\sqrt{-4\,ac+b^2}}\\
&-\frac{1}{2\,a}dilog\left(1\left(-2\,ce^x+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\\
&-\frac{b}{2\,a}dilog\left(1\left(-2\,ce^x+\sqrt{-4\,ac+b^2}-b\right)\left(-b+\sqrt{-4\,ac+b^2}\right)^{-1}\right)\frac{1}{\sqrt{-4\,ac+b^2}}
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] 1/2*x^2/a-1/2/a*x*ln((-2*c*exp(x)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a
*c+b^2)^(1/2)))-1/2/a*x/(-4*a*c+b^2)^(1/2)*ln((-2*c*exp(x)+(-4*a*
c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b-1/2/a*x*ln((2*c*exp(x)
+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))+1/2/a*x/(-4*a*c+b^
2)^(1/2)*ln((2*c*exp(x)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/
2)))*b-1/2/a*dilog((2*c*exp(x)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b
^2)^(1/2)))+1/2/a/(-4*a*c+b^2)^(1/2)*dilog((2*c*exp(x)+(-4*a*c+b^
2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b-1/2/a*dilog((-2*c*exp(x)+(-
4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))-1/2/a/(-4*a*c+b^2)^(
1/2)*dilog((-2*c*exp(x)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1
/2)))*b
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.259536, size = 456, normalized size = 1.65

$$\frac{\left(b^2-4\,ac\right)x^2+\left(ab\sqrt{\frac{b^2-4\,ac}{a^2}}-b^2+4\,ac\right)\mathrm{Li}_2\left(-\frac{2\,ce^x+a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}{a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}+1\right)-\left(ab\sqrt{\frac{b^2-4\,ac}{a^2}}+b^2-4\,ac\right)\mathrm{Li}_2\left(\frac{2\,ce^x-a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}{a\sqrt{\frac{b^2-4\,ac}{a^2}}-b}+1\right.}{2\left(ab^2-4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*((b^2 - 4*a*c)*x^2 + (a*b*sqrt((b^2 - 4*a*c)/a^2) - b^2 + 4*a
*c)*dilog(-(2*c*e^x + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2
 - 4*a*c)/a^2) + b) + 1) - (a*b*sqrt((b^2 - 4*a*c)/a^2) + b^2 - 4
*a*c)*dilog((2*c*e^x - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^
2 - 4*a*c)/a^2) - b) + 1) + (a*b*x*sqrt((b^2 - 4*a*c)/a^2) - (b^2
 - 4*a*c)*x)*log((2*c*e^x + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqr
t((b^2 - 4*a*c)/a^2) + b)) - (a*b*x*sqrt((b^2 - 4*a*c)/a^2) + (b^
2 - 4*a*c)*x)*log(-(2*c*e^x - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*s
qrt((b^2 - 4*a*c)/a^2) - b)))/(a*b^2 - 4*a^2*c)
```

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

$$\int \frac{x}{a+be^x+ce^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] Integral(x/(a + b*exp(x) + c*exp(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{ce^{(2\,x)}+be^x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x/(c*e^(2*x) + b*e^x + a), x)
```

3.515 $\int \frac{x^2}{1+2e^x+e^{2x}} \, dx$

Optimal. Leaf size=72

$$-2x\text{PolyLog}\left(2,-e^x\right)+2\text{PolyLog}\left(2,-e^x\right)+2\text{PolyLog}\left(3,-e^x\right)+\frac{x^3}{3}+\frac{x^2}{e^x+1}-x^2-x^2\log\left(e^x+1\right)+2x\log\left(e^x+1\right)$$

```
[Out] -x^2 + x^2/(1 + E^x) + x^3/3 + 2*x*Log[1 + E^x] - x^2*Log[1 + E^x
] + 2*PolyLog[2, -E^x] - 2*x*PolyLog[2, -E^x] + 2*PolyLog[3, -E^x
]
```

Rubi [A] time = 0.341545, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556

$$-2x\text{PolyLog}\left(2,-e^x\right)+2\text{PolyLog}\left(2,-e^x\right)+2\text{PolyLog}\left(3,-e^x\right)+\frac{x^3}{3}+\frac{x^2}{e^x+1}-x^2-x^2\log\left(e^x+1\right)+2x\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(1 + 2*E^x + E^(2*x)),x]
```

```
[Out] -x^2 + x^2/(1 + E^x) + x^3/3 + 2*x*Log[1 + E^x] - x^2*Log[1 + E^x
] + 2*PolyLog[2, -E^x] - 2*x*PolyLog[2, -E^x] + 2*PolyLog[3, -E^x
]
```

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

$$\int \frac{x^2}{e^{2x}+2e^x+1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x**2/(exp(2*x) + 2*exp(x) + 1), x)
```

Mathematica [A] time = 0.13834, size = 57, normalized size = 0.79

$$-2(x-1)\text{PolyLog}\left(2,-e^x\right)+2\text{PolyLog}\left(3,-e^x\right)+\frac{\left(e^x(x-3)+x\right)x^2}{3\left(e^x+1\right)}-(x-2)x\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(1 + 2*E^x + E^(2*x)),x]
```

```
[Out] (x^2*(E^x*(-3 + x) + x))/(3*(1 + E^x)) - (-2 + x)*x*Log[1 + E^x]
- 2*(-1 + x)*PolyLog[2, -E^x] + 2*PolyLog[3, -E^x]
```

Maple [A] time = 0.044, size = 65, normalized size = 0.9

$$-x^2+\frac{x^2}{1+e^x}+\frac{x^3}{3}+2\,x\ln\left(1+e^x\right)-x^2\ln\left(1+e^x\right)+2\,\mathit{polylog}\left(2,-e^x\right)-2\,x\mathit{polylog}\left(2,-e^x\right)+2\,\mathit{polylog}\left(3,-e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] -x^2+x^2/(1+exp(x))+1/3*x^3+2*x*ln(1+exp(x))-x^2*ln(1+exp(x))+2*p
olylog(2,-exp(x))-2*x*polylog(2,-exp(x))+2*polylog(3,-exp(x))
```

Maxima [A] time = 0.845112, size = 84, normalized size = 1.17

$$\frac{1}{3}x^3 - x^2\log\left(e^x+1\right) - x^2 - 2\,x\mathrm{Li}_2\left(-e^x\right) + 2\,x\log\left(e^x+1\right) + \frac{x^2}{e^x+1} + 2\,\mathrm{Li}_2\left(-e^x\right) + 2\,\mathrm{Li}_3(-e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 2*e^x + 1),x, algorithm="maxima")
```

```
[Out] 1/3*x^3 - x^2*log(e^x + 1) - x^2 - 2*x*dilog(-e^x) + 2*x*log(e^x
+ 1) + x^2/(e^x + 1) + 2*dilog(-e^x) + 2*polylog(3, -e^x)
```

Fricas [A] time = 0.254305, size = 103, normalized size = 1.43

$$\frac{x^3 - 6\left((x-1)e^x + x - 1\right)\mathrm{Li}_2\left(-e^x\right) + \left(x^3 - 3\,x^2\right)e^x - 3\left(x^2 + \left(x^2 - 2\,x\right)e^x - 2\,x\right)\log\left(e^x+1\right) + 6\left(e^x+1\right)\mathrm{Li}_3(-e^x)}{3\left(e^x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 2*e^x + 1),x, algorithm="fricas")
```

```
[Out] 1/3*(x^3 - 6*((x - 1)*e^x + x - 1)*dilog(-e^x) + (x^3 - 3*x^2)*e^
x - 3*(x^2 + (x^2 - 2*x)*e^x - 2*x)*log(e^x + 1) + 6*(e^x + 1)*po
lylog(3, -e^x))/(e^x + 1)
```

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

$$\frac{x^2}{e^x+1} + \int \frac{x\,(x-2)}{e^x+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] x**2/(exp(x) + 1) + Integral(x*(x - 2)/(exp(x) + 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{e^{(2\,x)} + 2\,e^x + 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 2*e^x + 1),x, algorithm="giac")
```

```
[Out] integrate(x^2/(e^(2*x) + 2*e^x + 1), x)
```

3.516 $\int \frac{x^2}{2+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=77

$$-2x\text{PolyLog}\left(2,-e^x\right)+x\text{PolyLog}\left(2,-\frac{e^x}{2}\right)+2\text{PolyLog}\left(3,-e^x\right)-\text{PolyLog}\left(3,-\frac{e^x}{2}\right)+\frac{x^3}{6}+\frac{1}{2}x^2\log\left(\frac{e^x}{2}+1\right)-x^2\log\left(e^x+1\right)$$

```
[Out] x^3/6 + (x^2*Log[1 + E^x/2])/2 - x^2*Log[1 + E^x] - 2*x*PolyLog[2
, -E^x] + x*PolyLog[2, -E^x/2] + 2*PolyLog[3, -E^x] - PolyLog[3,
-E^x/2]
```

Rubi [A] time = 0.310073, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-2x\text{PolyLog}\left(2,-e^x\right)+x\text{PolyLog}\left(2,-\frac{e^x}{2}\right)+2\text{PolyLog}\left(3,-e^x\right)-\text{PolyLog}\left(3,-\frac{e^x}{2}\right)+\frac{x^3}{6}+\frac{1}{2}x^2\log\left(\frac{e^x}{2}+1\right)-x^2\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(2 + 3*E^x + E^(2*x)),x]
```

```
[Out] x^3/6 + (x^2*Log[1 + E^x/2])/2 - x^2*Log[1 + E^x] - 2*x*PolyLog[2
, -E^x] + x*PolyLog[2, -E^x/2] + 2*PolyLog[3, -E^x] - PolyLog[3,
-E^x/2]
```

Rubi in Sympy [A] time = 25.8259, size = 65, normalized size = 0.84

$$-x^2\log\left(1+e^{-x}\right)+\frac{x^2\log\left(1+2e^{-x}\right)}{2}-x\,\text{Li}_2\left(-2e^{-x}\right)+2x\,\text{Li}_2\left(-e^{-x}\right)-\text{Li}_3\left(-2e^{-x}\right)+2\,\text{Li}_3\left(-e^{-x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] -x**2*log(1 + exp(-x)) + x**2*log(1 + 2*exp(-x))/2 - x*polylog(2,
 -2*exp(-x)) + 2*x*polylog(2, -exp(-x)) - polylog(3, -2*exp(-x))
+ 2*polylog(3, -exp(-x))
```

Mathematica [A] time = 0.0187209, size = 77, normalized size = 1.

$$-2x\text{PolyLog}\left(2,-e^x\right)+x\text{PolyLog}\left(2,-\frac{e^x}{2}\right)+2\text{PolyLog}\left(3,-e^x\right)-\text{PolyLog}\left(3,-\frac{e^x}{2}\right)+\frac{x^3}{6}+\frac{1}{2}x^2\log\left(\frac{e^x}{2}+1\right)-x^2\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(2 + 3*E^x + E^(2*x)),x]
```

```
[Out] x^3/6 + (x^2*Log[1 + E^x/2])/2 - x^2*Log[1 + E^x] - 2*x*PolyLog[2
, -E^x] + x*PolyLog[2, -E^x/2] + 2*PolyLog[3, -E^x] - PolyLog[3,
-E^x/2]
```

Maple [A] time = 0.01, size = 62, normalized size = 0.8

$$\frac{x^3}{6}+\frac{x^2}{2}\ln\left(1+\frac{\mathrm{e}^x}{2}\right)-x^2\ln\left(1+\mathrm{e}^x\right)-2\,x polylog\left(2,-\mathrm{e}^x\right)+x polylog\left(2,-\frac{\mathrm{e}^x}{2}\right)+2\,polylog\left(3,-\mathrm{e}^x\right)-polylog\left(3,-\frac{\mathrm{e}^x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] 1/6*x^3+1/2*x^2*ln(1+1/2*exp(x))-x^2*ln(1+exp(x))-2*x*polylog(2,-
exp(x))+x*polylog(2,-1/2*exp(x))+2*polylog(3,-exp(x))-polylog(3,-
1/2*exp(x))
```

Maxima [A] time = 0.84708, size = 80, normalized size = 1.04

$$\frac{1}{6}\,x^3-x^2\log\left(e^x+1\right)+\frac{1}{2}\,x^2\log\left(\frac{1}{2}\,e^x+1\right)+x\mathrm{Li}_2\left(-\frac{1}{2}\,e^x\right)-2\,x\mathrm{Li}_2\left(-e^x\right)-\mathrm{Li}_3(-\frac{1}{2}\,e^x)+2\,\mathrm{Li}_3(-e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 3*e^x + 2),x, algorithm="maxima")
```

```
[Out] 1/6*x^3 - x^2*log(e^x + 1) + 1/2*x^2*log(1/2*e^x + 1) + x*dilog(-
1/2*e^x) - 2*x*dilog(-e^x) - polylog(3, -1/2*e^x) + 2*polylog(3,
-e^x)
```

Fricas [A] time = 0.257558, size = 80, normalized size = 1.04

$$\frac{1}{6}\,x^3-x^2\log\left(e^x+1\right)+\frac{1}{2}\,x^2\log\left(\frac{1}{2}\,e^x+1\right)+x\mathrm{Li}_2\left(-\frac{1}{2}\,e^x\right)-2\,x\mathrm{Li}_2\left(-e^x\right)-\mathrm{Li}_3(-\frac{1}{2}\,e^x)+2\,\mathrm{Li}_3(-e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 3*e^x + 2),x, algorithm="fricas")
```

```
[Out] 1/6*x^3 - x^2*log(e^x + 1) + 1/2*x^2*log(1/2*e^x + 1) + x*dilog(-
1/2*e^x) - 2*x*dilog(-e^x) - polylog(3, -1/2*e^x) + 2*polylog(3,
-e^x)
```

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

$$\int\frac{x^2}{\left(e^x+1\right)\left(e^x+2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x**2/((exp(x) + 1)*(exp(x) + 2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{e^{(2x)} + 3e^x + 2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 3*e^x + 2),x, algorithm="giac")
```

```
[Out] integrate(x^2/(e^(2*x) + 3*e^x + 2), x)
```

3.517 $\int \frac{x^2}{-1+e^x+e^{2x}}\,dx$

Optimal. Leaf size=259

$$-\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{1-\sqrt{5}}\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{1+\sqrt{5}}\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}+\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{1-\sqrt{5}}\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}-\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{1+\sqrt{5}}\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}-\frac{2x^3}{3\sqrt{5}\left(1+\sqrt{5}\right)}+\frac{2x^3}{3\sqrt{5}\left(1-\sqrt{5}\right)}-\frac{2x^2\log\left(\frac{2e^x}{1-\sqrt{5}}+1\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{2x^2\log\left(\frac{2e^x}{1+\sqrt{5}}+1\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}$$

```
[Out] (2*x^3)/(3*Sqrt[5]*(1 - Sqrt[5])) - (2*x^3)/(3*Sqrt[5]*(1 + Sqrt[
5])) - (2*x^2*Log[1 + (2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqrt[
5])) + (2*x^2*Log[1 + (2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + Sqrt[
5])) - (4*x*PolyLog[2, (-2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqr
t[5])) + (4*x*PolyLog[2, (-2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + S
qrt[5])) + (4*PolyLog[3, (-2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - S
qrt[5])) - (4*PolyLog[3, (-2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + S
qrt[5]))
```

Rubi [A] time = 0.456105, antiderivative size = 259, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375

$$-\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{1-\sqrt{5}}\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{1+\sqrt{5}}\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}+\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{1-\sqrt{5}}\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}-\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{1+\sqrt{5}}\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}-\frac{2x^3}{3\sqrt{5}\left(1+\sqrt{5}\right)}+\frac{2x^3}{3\sqrt{5}\left(1-\sqrt{5}\right)}-\frac{2x^2\log\left(\frac{2e^x}{1-\sqrt{5}}+1\right)}{\sqrt{5}\left(1-\sqrt{5}\right)}+\frac{2x^2\log\left(\frac{2e^x}{1+\sqrt{5}}+1\right)}{\sqrt{5}\left(1+\sqrt{5}\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(-1 + E^x + E^(2*x)),x]
```

```
[Out] (2*x^3)/(3*Sqrt[5]*(1 - Sqrt[5])) - (2*x^3)/(3*Sqrt[5]*(1 + Sqrt[
5])) - (2*x^2*Log[1 + (2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqrt[
5])) + (2*x^2*Log[1 + (2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + Sqrt[
5])) - (4*x*PolyLog[2, (-2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - Sqr
t[5])) + (4*x*PolyLog[2, (-2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + S
qrt[5])) + (4*PolyLog[3, (-2*E^x)/(1 - Sqrt[5])])/(Sqrt[5]*(1 - S
qrt[5])) - (4*PolyLog[3, (-2*E^x)/(1 + Sqrt[5])])/(Sqrt[5]*(1 + S
qrt[5]))
```

Rubi in Sympy [A] time = 33.7903, size = 199, normalized size = 0.77

$$\frac{2\sqrt{5}x^2\log\left(1+\left(\frac{1}{2}+\frac{\sqrt{5}}{2}\right)e^{-x}\right)}{5\left(1+\sqrt{5}\right)}-\frac{2\sqrt{5}x^2\log\left(1+\left(-\frac{\sqrt{5}}{2}+\frac{1}{2}\right)e^{-x}\right)}{5\left(-\sqrt{5}+1\right)}+\frac{4\sqrt{5}x\operatorname{Li}_{2}\left(\left(-\frac{1}{2}+\frac{\sqrt{5}}{2}\right)e^{-x}\right)}{5\left(-\sqrt{5}+1\right)}-\frac{4\sqrt{5}x\operatorname{Li}_{2}\left(\left(-\frac{\sqrt{5}}{2}-\frac{1}{2}\right)e^{-x}\right)}{5\left(1+\sqrt{5}\right)}+\frac{4\sqrt{5}\operatorname{Li}_{3}\left(\left(-\frac{1}{2}+\frac{\sqrt{5}}{2}\right)e^{-x}\right)}{5\left(-\sqrt{5}+1\right)}-\frac{4\sqrt{5}\operatorname{Li}_{3}\left(\left(-\frac{\sqrt{5}}{2}-\frac{1}{2}\right)e^{-x}\right)}{5\left(1+\sqrt{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] 2*sqrt(5)*x**2*log(1 + (1/2 + sqrt(5)/2)*exp(-x))/(5*(1 + sqrt(5)
)) - 2*sqrt(5)*x**2*log(1 + (-sqrt(5)/2 + 1/2)*exp(-x))/(5*(-sqrt
(5) + 1)) + 4*sqrt(5)*x*polylog(2, (-1/2 + sqrt(5)/2)*exp(-x))/(5
*(-sqrt(5) + 1)) - 4*sqrt(5)*x*polylog(2, (-sqrt(5)/2 - 1/2)*exp(
-x))/(5*(1 + sqrt(5))) + 4*sqrt(5)*polylog(3, (-1/2 + sqrt(5)/2)*
exp(-x))/(5*(-sqrt(5) + 1)) - 4*sqrt(5)*polylog(3, (-sqrt(5)/2 -
1/2)*exp(-x))/(5*(1 + sqrt(5)))
```

Mathematica [A] time = 0.199504, size = 252, normalized size = 0.97

$$6\left(1+\sqrt{5}\right)x\text{PolyLog}\left(2,\frac{2e^x}{\sqrt{5}-1}\right)+6\left(\sqrt{5}-1\right)x\text{PolyLog}\left(2,-\frac{2e^x}{1+\sqrt{5}}\right)-6\sqrt{5}\text{PolyLog}\left(3,\frac{2e^x}{\sqrt{5}-1}\right)-6\text{PolyLog}\left(3,\frac{2e^x}{\sqrt{5}-1}\right)-6\sqrt{5}\text{P}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(-1 + E^x + E^(2*x)),x]
```

```
[Out] (-2*Sqrt[5]*x^3 + 3*x^2*Log[1 - (2*E^x)/(-1 + Sqrt[5])] + 3*Sqrt[
5]*x^2*Log[1 - (2*E^x)/(-1 + Sqrt[5])] - 3*x^2*Log[1 + (2*E^x)/(1
 + Sqrt[5])] + 3*Sqrt[5]*x^2*Log[1 + (2*E^x)/(1 + Sqrt[5])] + 6*(
1 + Sqrt[5])*x*PolyLog[2, (2*E^x)/(-1 + Sqrt[5])] + 6*(-1 + Sqrt[
5])*x*PolyLog[2, (-2*E^x)/(1 + Sqrt[5])] - 6*PolyLog[3, (2*E^x)/(
-1 + Sqrt[5])] - 6*Sqrt[5]*PolyLog[3, (2*E^x)/(-1 + Sqrt[5])] + 6
*PolyLog[3, (-2*E^x)/(1 + Sqrt[5])] - 6*Sqrt[5]*PolyLog[3, (-2*E^
x)/(1 + Sqrt[5])])/(6*Sqrt[5])
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int \frac{x^2}{-1+e^x+e^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] int(x^2/(-1+exp(x)+exp(2*x)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{e^{(2x)}+e^x-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + e^x - 1),x, algorithm="maxima")
```

```
[Out] integrate(x^2/(e^(2*x) + e^x - 1), x)
```

Fricas [A] time = 0.304204, size = 238, normalized size = 0.92

$$-\frac{1}{3}x^3 - \frac{1}{5}\left(\sqrt{5}x - 5x\right)\mathrm{Li}_2\left(-\frac{\sqrt{5} + 2e^x + 1}{\sqrt{5} + 1} + 1\right) + \frac{1}{5}\left(\sqrt{5}x + 5x\right)\mathrm{Li}_2\left(-\frac{\sqrt{5} - 2e^x - 1}{\sqrt{5} - 1} + 1\right) - \frac{1}{10}\left(\sqrt{5}x^2 - 5x^2\right)\log\left(\frac{\sqrt{5} + 2e^x + 1}{\sqrt{5} + 1}\right) + \frac{1}{10}\left(\sqrt{5}x^2 + 5x^2\right)\log\left(\frac{\sqrt{5} - 2e^x - 1}{\sqrt{5} - 1}\right) + \frac{1}{5}\left(\sqrt{5} - 5\right)\mathrm{Li}_3\left(-\frac{2e^x}{\sqrt{5} + 1}\right) - \frac{1}{5}\left(\sqrt{5} + 5\right)\mathrm{Li}_3\left(\frac{2e^x}{\sqrt{5} - 1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + e^x - 1),x, algorithm="fricas")
```

```
[Out] -1/3*x^3 - 1/5*(sqrt(5)*x - 5*x)*dilog(-(sqrt(5) + 2*e^x + 1)/(sq
rt(5) + 1) + 1) + 1/5*(sqrt(5)*x + 5*x)*dilog(-(sqrt(5) - 2*e^x -
 1)/(sqrt(5) - 1) + 1) - 1/10*(sqrt(5)*x^2 - 5*x^2)*log((sqrt(5)
+ 2*e^x + 1)/(sqrt(5) + 1)) + 1/10*(sqrt(5)*x^2 + 5*x^2)*log((sqr
t(5) - 2*e^x - 1)/(sqrt(5) - 1)) + 1/5*(sqrt(5) - 5)*polylog(3, -
2*e^x/(sqrt(5) + 1)) - 1/5*(sqrt(5) + 5)*polylog(3, 2*e^x/(sqrt(5
) - 1))
```

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

$$\int \frac{x^2}{e^{2x} + e^x - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(-1+exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x**2/(exp(2*x) + exp(x) - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{e^{(2x)} + e^x - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + e^x - 1),x, algorithm="giac")
```

```
[Out] integrate(x^2/(e^(2*x) + e^x - 1), x)
```

3.518 $\int \frac{x^2}{3+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=293

$$-\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}+\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}-\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}+\frac{2x^3}{3\sqrt{3}\left(\sqrt{3}+3i\right)}-\frac{2x^3}{3\sqrt{3}\left(-\sqrt{3}+3i\right)}-\frac{2x^2\log\left(1+\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{2x^2\log\left(1+\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}$$

```
[Out] (-2*x^3)/(3*Sqrt[3]*(3*I - Sqrt[3])) + (2*x^3)/(3*Sqrt[3]*(3*I +
Sqrt[3])) - (2*x^2*Log[1 + (2*E^x)/(3 - I*Sqrt[3])])/(Sqrt[3]*(3*
I + Sqrt[3])) + (2*x^2*Log[1 + (2*E^x)/(3 + I*Sqrt[3])])/(Sqrt[3]
*(3*I - Sqrt[3])) - (4*x*PolyLog[2, (-2*E^x)/(3 - I*Sqrt[3])])/(S
qrt[3]*(3*I + Sqrt[3])) + (4*x*PolyLog[2, (-2*E^x)/(3 + I*Sqrt[3]
)])/(Sqrt[3]*(3*I - Sqrt[3])) + (4*PolyLog[3, (-2*E^x)/(3 - I*Sqr
t[3])])/(Sqrt[3]*(3*I + Sqrt[3])) - (4*PolyLog[3, (-2*E^x)/(3 + I
*Sqrt[3])])/(Sqrt[3]*(3*I - Sqrt[3]))
```

Rubi [A] time = 0.470417, antiderivative size = 293, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{4x\text{PolyLog}\left(2,-\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}+\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}-\frac{4\text{PolyLog}\left(3,-\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}+\frac{2x^3}{3\sqrt{3}\left(\sqrt{3}+3i\right)}-\frac{2x^3}{3\sqrt{3}\left(-\sqrt{3}+3i\right)}-\frac{2x^2\log\left(1+\frac{2e^x}{3-i\sqrt{3}}\right)}{\sqrt{3}\left(\sqrt{3}+3i\right)}+\frac{2x^2\log\left(1+\frac{2e^x}{3+i\sqrt{3}}\right)}{\sqrt{3}\left(-\sqrt{3}+3i\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(3 + 3*E^x + E^(2*x)),x]
```

```
[Out] (-2*x^3)/(3*Sqrt[3]*(3*I - Sqrt[3])) + (2*x^3)/(3*Sqrt[3]*(3*I +
Sqrt[3])) - (2*x^2*Log[1 + (2*E^x)/(3 - I*Sqrt[3])])/(Sqrt[3]*(3*
I + Sqrt[3])) + (2*x^2*Log[1 + (2*E^x)/(3 + I*Sqrt[3])])/(Sqrt[3]
*(3*I - Sqrt[3])) - (4*x*PolyLog[2, (-2*E^x)/(3 - I*Sqrt[3])])/(S
qrt[3]*(3*I + Sqrt[3])) + (4*x*PolyLog[2, (-2*E^x)/(3 + I*Sqrt[3]
)])/(Sqrt[3]*(3*I - Sqrt[3])) + (4*PolyLog[3, (-2*E^x)/(3 - I*Sqr
t[3])])/(Sqrt[3]*(3*I + Sqrt[3])) - (4*PolyLog[3, (-2*E^x)/(3 + I
*Sqrt[3])])/(Sqrt[3]*(3*I - Sqrt[3]))
```

Rubi in Sympy [A] time = 45.7132, size = 189, normalized size = 0.65

$$-x^2\left(\frac{1}{6}-\frac{\sqrt{3}i}{6}\right)\log\left(1+\left(\frac{3}{2}-\frac{\sqrt{3}i}{2}\right)e^{-x}\right)-x^2\left(\frac{1}{6}+\frac{\sqrt{3}i}{6}\right)\log\left(1+\left(\frac{3}{2}+\frac{\sqrt{3}i}{2}\right)e^{-x}\right)+x\left(\frac{1}{3}+\frac{\sqrt{3}i}{3}\right)\text{Li}_2\left(\left(-\frac{3}{2}-\frac{\sqrt{3}i}{2}\right)e^{-x}\right)+x\left(\frac{1}{3}-\frac{\sqrt{3}i}{3}\right)\text{Li}_2\left(\left(-\frac{3}{2}+\frac{\sqrt{3}i}{2}\right)e^{-x}\right)+\left(\frac{1}{3}+\frac{\sqrt{3}i}{3}\right)\text{Li}_3\left(\left(-\frac{3}{2}-\frac{\sqrt{3}i}{2}\right)e^{-x}\right)+\left(\frac{1}{3}-\frac{\sqrt{3}i}{3}\right)\text{Li}_3\left(\left(-\frac{3}{2}+\frac{\sqrt{3}i}{2}\right)e^{-x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] -x**2*(1/6 - sqrt(3)*I/6)*log(1 + (3/2 - sqrt(3)*I/2)*exp(-x)) -
x**2*(1/6 + sqrt(3)*I/6)*log(1 + (3/2 + sqrt(3)*I/2)*exp(-x)) + x
*(1/3 + sqrt(3)*I/3)*polylog(2, (-3/2 - sqrt(3)*I/2)*exp(-x)) + x
*(1/3 - sqrt(3)*I/3)*polylog(2, (-3/2 + sqrt(3)*I/2)*exp(-x)) + (
1/3 + sqrt(3)*I/3)*polylog(3, (-3/2 - sqrt(3)*I/2)*exp(-x)) + (1/
3 - sqrt(3)*I/3)*polylog(3, (-3/2 + sqrt(3)*I/2)*exp(-x))
```

Mathematica [A] time = 0.135723, size = 304, normalized size = 1.04

$$\frac{-6\left(\sqrt{3}-3i\right)x\text{PolyLog}\left(2,\frac{2e^x}{-3+i\sqrt{3}}\right)-6\left(\sqrt{3}+3i\right)x\text{PolyLog}\left(2,-\frac{2e^x}{3+i\sqrt{3}}\right)+6\sqrt{3}\text{PolyLog}\left(3,\frac{2e^x}{-3+i\sqrt{3}}\right)-18i\text{PolyLog}\left(3,\frac{2e^x}{-3+i\ldots}\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(3 + 3*E^x + E^(2*x)),x]
```

```
[Out] (2*Sqrt[3]*x^3 - (9*I)*x^2*Log[1 + (2*E^x)/(3 + I*Sqrt[3])] - 3*S
qrt[3]*x^2*Log[1 + (2*E^x)/(3 + I*Sqrt[3])] + (9*I)*x^2*Log[1 + (
(2*I)*E^x)/(3*I + Sqrt[3])] - 3*Sqrt[3]*x^2*Log[1 + ((2*I)*E^x)/(
3*I + Sqrt[3])] - 6*(-3*I + Sqrt[3])*x*PolyLog[2, (2*E^x)/(-3 + I
*Sqrt[3])] - 6*(3*I + Sqrt[3])*x*PolyLog[2, (-2*E^x)/(3 + I*Sqrt[
3])] - (18*I)*PolyLog[3, (2*E^x)/(-3 + I*Sqrt[3])] + 6*Sqrt[3]*Po
lyLog[3, (2*E^x)/(-3 + I*Sqrt[3])] + (18*I)*PolyLog[3, (-2*E^x)/(
3 + I*Sqrt[3])] + 6*Sqrt[3]*PolyLog[3, (-2*E^x)/(3 + I*Sqrt[3])])
/(18*Sqrt[3])
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int \frac{x^2}{3+3\,e^x+e^{2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] int(x^2/(3+3*exp(x)+exp(2*x)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{e^{(2\,x)}+3\,e^x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 3*e^x + 3),x, algorithm="maxima")
```

```
[Out] integrate(x^2/(e^(2*x) + 3*e^x + 3), x)
```

Fricas [A] time = 0.299708, size = 300, normalized size = 1.02

$$\frac{1}{9}x^3 + \frac{1}{18}\left(-6i\sqrt{3}x - 6x\right)\mathrm{Li}_2\left(-\frac{2\sqrt{3}e^x + 3\sqrt{3} + 3i}{3\sqrt{3} + 3i} + 1\right) + \frac{1}{18}\left(6i\sqrt{3}x - 6x\right)\mathrm{Li}_2\left(-\frac{2\sqrt{3}e^x + 3\sqrt{3} - 3i}{3\sqrt{3} - 3i} + 1\right) + \frac{1}{18}\left(-3i\sqrt{3}x^2 - 3x^2\right)\log\left(\frac{2\sqrt{3}e^x + 3\sqrt{3} + 3i}{3\sqrt{3} + 3i}\right) + \frac{1}{18}\left(3i\sqrt{3}x^2 - 3x^2\right)\log\left(\frac{2\sqrt{3}e^x + 3\sqrt{3} - 3i}{3\sqrt{3} - 3i}\right) - \frac{1}{3}\left(-i\sqrt{3} - 1\right)\mathrm{Li}_3\left(-\frac{2\sqrt{3}e^x}{3\sqrt{3} + 3i}\right) - \frac{1}{3}\left(i\sqrt{3} - 1\right)\mathrm{Li}_3\left(-\frac{2\sqrt{3}e^x}{3\sqrt{3} - 3i}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 3*e^x + 3),x, algorithm="fricas")
```

```
[Out] 1/9*x^3 + 1/18*(-6*I*sqrt(3)*x - 6*x)*dilog(-(2*sqrt(3)*e^x + 3*s
qrt(3) + 3*I)/(3*sqrt(3) + 3*I) + 1) + 1/18*(6*I*sqrt(3)*x - 6*x)
*dilog(-(2*sqrt(3)*e^x + 3*sqrt(3) - 3*I)/(3*sqrt(3) - 3*I) + 1)
+ 1/18*(-3*I*sqrt(3)*x^2 - 3*x^2)*log((2*sqrt(3)*e^x + 3*sqrt(3)
+ 3*I)/(3*sqrt(3) + 3*I)) + 1/18*(3*I*sqrt(3)*x^2 - 3*x^2)*log((2
*sqrt(3)*e^x + 3*sqrt(3) - 3*I)/(3*sqrt(3) - 3*I)) - 1/3*(-I*sqrt
(3) - 1)*polylog(3, -2*sqrt(3)*e^x/(3*sqrt(3) + 3*I)) - 1/3*(I*sq
rt(3) - 1)*polylog(3, -2*sqrt(3)*e^x/(3*sqrt(3) - 3*I))
```

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

$$\int \frac{x^2}{e^{2x} + 3e^x + 3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(3+3*exp(x)+exp(2*x)),x)
```

```
[Out] Integral(x**2/(exp(2*x) + 3*exp(x) + 3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{e^{(2x)} + 3e^x + 3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(2*x) + 3*e^x + 3),x, algorithm="giac")
```

```
[Out] integrate(x^2/(e^(2*x) + 3*e^x + 3), x)
```

3.519 $\int \frac{x^2}{a+be^x+ce^{2x}}\,dx$

Optimal. Leaf size=391

$$\frac{4cx\text{PolyLog}\left(2,-\frac{2ce^x}{b-\sqrt{b^2-4ac}}\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{4cx\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)}{b\sqrt{b^2-4ac}-4ac+b^2}-\frac{4c\text{PolyLog}\left(3,-\frac{2ce^x}{b-\sqrt{b^2-4ac}}\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}-\frac{4c\text{PolyLog}\left(3,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)}{b\sqrt{b^2-4ac}-4ac+b^2}-\frac{2cx^3}{3\left(-b\sqrt{b^2-4ac}-4ac+b^2\right)}-\frac{2cx^3}{3\left(b\sqrt{b^2-4ac}-4ac+b^2\right)}+\frac{2cx^2\log\left(\frac{2ce^x}{b-\sqrt{b^2-4ac}}+1\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2cx^2\log\left(\frac{2ce^x}{\sqrt{b^2-4ac}+b}+1\right)}{b\sqrt{b^2-4ac}-4ac+b^2}$$

```
[Out] (-2*c*x^3)/(3*(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (2*c*x^3)/(3
*(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c])) + (2*c*x^2*Log[1 + (2*c*E^x
)/(b - Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) +
 (2*c*x^2*Log[1 + (2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*
c + b*Sqrt[b^2 - 4*a*c]) + (4*c*x*PolyLog[2, (-2*c*E^x)/(b - Sqrt
[b^2 - 4*a*c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) + (4*c*x*Pol
yLog[2, (-2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqr
t[b^2 - 4*a*c]) - (4*c*PolyLog[3, (-2*c*E^x)/(b - Sqrt[b^2 - 4*a*
c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) - (4*c*PolyLog[3, (-2*c
*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c
])
```

Rubi [A] time = 0.992374, antiderivative size = 391, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3

$$\frac{4cx\text{PolyLog}\left(2,-\frac{2ce^x}{b-\sqrt{b^2-4ac}}\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{4cx\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)}{b\sqrt{b^2-4ac}-4ac+b^2}-\frac{4c\text{PolyLog}\left(3,-\frac{2ce^x}{b-\sqrt{b^2-4ac}}\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}-\frac{4c\text{PolyLog}\left(3,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)}{b\sqrt{b^2-4ac}-4ac+b^2}-\frac{2cx^3}{3\left(-b\sqrt{b^2-4ac}-4ac+b^2\right)}-\frac{2cx^3}{3\left(b\sqrt{b^2-4ac}-4ac+b^2\right)}+\frac{2cx^2\log\left(\frac{2ce^x}{b-\sqrt{b^2-4ac}}+1\right)}{-b\sqrt{b^2-4ac}-4ac+b^2}+\frac{2cx^2\log\left(\frac{2ce^x}{\sqrt{b^2-4ac}+b}+1\right)}{b\sqrt{b^2-4ac}-4ac+b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*E^x + c*E^(2*x)),x]
```

```
[Out] (-2*c*x^3)/(3*(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (2*c*x^3)/(3
*(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c])) + (2*c*x^2*Log[1 + (2*c*E^x
)/(b - Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) +
 (2*c*x^2*Log[1 + (2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*
c + b*Sqrt[b^2 - 4*a*c]) + (4*c*x*PolyLog[2, (-2*c*E^x)/(b - Sqrt
[b^2 - 4*a*c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) + (4*c*x*Pol
yLog[2, (-2*c*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqr
t[b^2 - 4*a*c]) - (4*c*PolyLog[3, (-2*c*E^x)/(b - Sqrt[b^2 - 4*a*
c])])/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c]) - (4*c*PolyLog[3, (-2*c
*E^x)/(b + Sqrt[b^2 - 4*a*c])])/(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c
])
```

Rubi in Sympy [A] time = 66.489, size = 304, normalized size = 0.78

$$\frac{2cx^2\log\left(1+\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2+b\sqrt{-4ac+b^2}}+\frac{2cx^2\log\left(1+\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2-b\sqrt{-4ac+b^2}}-\frac{4cx\,\mathrm{Li}_2\left(-\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2+b\sqrt{-4ac+b^2}}-\frac{4cx\,\mathrm{Li}_2\left(-\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2-b\sqrt{-4ac+b^2}}-\frac{4c\,\mathrm{Li}_3\left(-\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2+b\sqrt{-4ac+b^2}}-\frac{4c\,\mathrm{Li}_3\left(-\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-x}}{2c}\right)}{-4ac+b^2-b\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] 2*c*x**2*log(1 + (b + sqrt(-4*a*c + b**2))*exp(-x)/(2*c))/(-4*a*c
 + b**2 + b*sqrt(-4*a*c + b**2)) + 2*c*x**2*log(1 + (b - sqrt(-4*
a*c + b**2))*exp(-x)/(2*c))/(-4*a*c + b**2 - b*sqrt(-4*a*c + b**2
)) - 4*c*x*polylog(2, -(b + sqrt(-4*a*c + b**2))*exp(-x)/(2*c))/(
-4*a*c + b**2 + b*sqrt(-4*a*c + b**2)) - 4*c*x*polylog(2, -(b - s
qrt(-4*a*c + b**2))*exp(-x)/(2*c))/(-4*a*c + b**2 - b*sqrt(-4*a*c
 + b**2)) - 4*c*polylog(3, -(b + sqrt(-4*a*c + b**2))*exp(-x)/(2*
c))/(-4*a*c + b**2 + b*sqrt(-4*a*c + b**2)) - 4*c*polylog(3, -(b
- sqrt(-4*a*c + b**2))*exp(-x)/(2*c))/(-4*a*c + b**2 - b*sqrt(-4*
a*c + b**2))
```

Mathematica [A] time = 0.254885, size = 407, normalized size = 1.04

$$\frac{-6x\left(\sqrt{b^2-4ac}+b\right)\mathrm{PolyLog}\left(2,\frac{2ce^x}{\sqrt{b^2-4ac}-b}\right)+6x\left(b-\sqrt{b^2-4ac}\right)\mathrm{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{b^2-4ac}+b}\right)+6b\mathrm{PolyLog}\left(3,\frac{2ce^x}{\sqrt{b^2-4ac}-b}\right)}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*E^x + c*E^(2*x)),x]
```

```
[Out] (2*Sqrt[b^2 - 4*a*c]*x^3 - 3*b*x^2*Log[1 + (2*c*E^x)/(b - Sqrt[b^
2 - 4*a*c])] - 3*Sqrt[b^2 - 4*a*c]*x^2*Log[1 + (2*c*E^x)/(b - Sqr
t[b^2 - 4*a*c])] + 3*b*x^2*Log[1 + (2*c*E^x)/(b + Sqrt[b^2 - 4*a*
c])] - 3*Sqrt[b^2 - 4*a*c]*x^2*Log[1 + (2*c*E^x)/(b + Sqrt[b^2 -
4*a*c])] - 6*(b + Sqrt[b^2 - 4*a*c])*x*PolyLog[2, (2*c*E^x)/(-b +
 Sqrt[b^2 - 4*a*c])] + 6*(b - Sqrt[b^2 - 4*a*c])*x*PolyLog[2, (-2
*c*E^x)/(b + Sqrt[b^2 - 4*a*c])] + 6*b*PolyLog[3, (2*c*E^x)/(-b +
 Sqrt[b^2 - 4*a*c])] + 6*Sqrt[b^2 - 4*a*c]*PolyLog[3, (2*c*E^x)/(
-b + Sqrt[b^2 - 4*a*c])] - 6*b*PolyLog[3, (-2*c*E^x)/(b + Sqrt[b^
2 - 4*a*c])] + 6*Sqrt[b^2 - 4*a*c]*PolyLog[3, (-2*c*E^x)/(b + Sqr
t[b^2 - 4*a*c])])/(6*a*Sqrt[b^2 - 4*a*c])
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int \frac{x^2}{a+be^x+ce^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] int(x^2/(a+b*exp(x)+c*exp(2*x)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.292679, size = 632, normalized size = 1.62

$$2\left(b^2-4\,ac\right)x^3+6\left(abx\sqrt{\frac{b^2-4\,ac}{a^2}}-\left(b^2-4\,ac\right)x\right)\mathrm{Li}_2\left(-\frac{2\,ce^x+a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}{a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}+1\right)-6\left(abx\sqrt{\frac{b^2-4\,ac}{a^2}}+\left(b^2-4\,ac\right)x\right)\mathrm{Li}_2\left(\frac{2\,ce^x-}{a\sqrt{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(2*(b^2 - 4*a*c)*x^3 + 6*(a*b*x*sqrt((b^2 - 4*a*c)/a^2) - (b^
2 - 4*a*c)*x)*dilog(-(2*c*e^x + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a
*sqrt((b^2 - 4*a*c)/a^2) + b) + 1) - 6*(a*b*x*sqrt((b^2 - 4*a*c)/
a^2) + (b^2 - 4*a*c)*x)*dilog((2*c*e^x - a*sqrt((b^2 - 4*a*c)/a^2
) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b) + 1) + 3*(a*b*x^2*sqrt((b^
2 - 4*a*c)/a^2) - (b^2 - 4*a*c)*x^2)*log((2*c*e^x + a*sqrt((b^2 -
 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) + b)) - 3*(a*b*x^2*s
qrt((b^2 - 4*a*c)/a^2) + (b^2 - 4*a*c)*x^2)*log(-(2*c*e^x - a*sqr
t((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b)) - 6*(a
*b*sqrt((b^2 - 4*a*c)/a^2) - b^2 + 4*a*c)*polylog(3, -2*c*e^x/(a*
sqrt((b^2 - 4*a*c)/a^2) + b)) + 6*(a*b*sqrt((b^2 - 4*a*c)/a^2) +
b^2 - 4*a*c)*polylog(3, 2*c*e^x/(a*sqrt((b^2 - 4*a*c)/a^2) - b)))
/(a*b^2 - 4*a^2*c)
```

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

$$\int \frac{x^2}{a+be^x+ce^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(a+b*exp(x)+c*exp(2*x)),x)
```

```
[Out] Integral(x**2/(a + b*exp(x) + c*exp(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{ce^{(2\,x)}+be^x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(x^2/(c*e^(2*x) + b*e^x + a), x)
```

3.520 $\int \frac{1}{1+2f^{c+dx}+f^{2c+2dx}}\,dx$

Optimal. Leaf size=40

$$-\frac{\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{1}{d\log(f)\left(f^{c+dx}+1\right)}+x$$

```
[Out] x + 1/(d*(1 + f^(c + d*x))*Log[f]) - Log[1 + f^(c + d*x)]/(d*Log[
f])
```

Rubi [A] time = 0.0478951, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$-\frac{\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{1}{d\log(f)\left(f^{c+dx}+1\right)}+x$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + 2*f^(c + d*x) + f^(2*c + 2*d*x))^(-1),x]
```

```
[Out] x + 1/(d*(1 + f^(c + d*x))*Log[f]) - Log[1 + f^(c + d*x)]/(d*Log[
f])
```

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

$$\int \frac{1}{2f^{c+dx}+f^{2c+2dx}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1+2*f**(d*x+c)+f**(2*d*x+2*c)),x)
```

```
[Out] Integral(1/(2*f**(c + d*x) + f**(2*c + 2*d*x) + 1), x)
```

Mathematica [A] time = 0.0754808, size = 40, normalized size = 1.

$$-\frac{\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{1}{d\log(f)\left(f^{c+dx}+1\right)}+x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + 2*f^(c + d*x) + f^(2*c + 2*d*x))^(-1),x]
```

```
[Out] x + 1/(d*(1 + f^(c + d*x))*Log[f]) - Log[1 + f^(c + d*x)]/(d*Log[
f])
```

Maple [A] time = 0.024, size = 68, normalized size = 1.7

$$\frac{1}{e^{(dx+c)\ln(f)}+1}\left(x+xe^{(dx+c)\ln(f)}-\frac{e^{(dx+c)\ln(f)}}{d\ln(f)}\right)-\frac{\ln\left(e^{(dx+c)\ln(f)}+1\right)}{d\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(1/(1+2*f^(d*x+c)+f^(2*d*x+2*c)),x)
```

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

Maxima [A] time = 0.753029, size = 74, normalized size = 1.85

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="maxima")
```

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

Fricas [A] time = 0.281298, size = 80, normalized size = 2.

$$\frac{df^{dx+c}x\log\left(f\right)+dx\log\left(f\right)-\left(f^{dx+c}+1\right)\log\left(f^{dx+c}+1\right)+1}{df^{dx+c}\log\left(f\right)+d\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="fricas")
```

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

Sympy [A] time = 0.121286, size = 34, normalized size = 0.85

$$x+\frac{1}{df^{c+dx}\log\left(f\right)+d\log\left(f\right)}-\frac{\log\left(f^{c+dx}+1\right)}{d\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(1/(1+2*f**(d*x+c)+f**(2*d*x+2*c)),x)
```

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

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{f^{2\,dx+2\,c}+2\,f^{dx+c}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="giac")
```

```
[Out] integrate(1/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1), x)
```

3.521 $\int \frac{1}{a+bf^{c+dx}+cf^{2c+2dx}} \, dx$

Optimal. Leaf size=94

$$\frac{b\tanh^{-1}\left(\frac{b+2cf^{c+dx}}{\sqrt{b^2-4ac}}\right)}{ad\log(f)\sqrt{b^2-4ac}}-\frac{\log\left(a+bf^{c+dx}+cf^{2c+2dx}\right)}{2ad\log(f)}+\frac{x}{a}$$

```
[Out] x/a + (b*ArcTanh[(b + 2*c*f^(c + d*x))/Sqrt[b^2 - 4*a*c]])/(a*Sqr
t[b^2 - 4*a*c]*d*Log[f]) - Log[a + b*f^(c + d*x) + c*f^(2*c + 2*d
*x)]/(2*a*d*Log[f])
```

Rubi [A] time = 0.16212, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.28

$$\frac{b\tanh^{-1}\left(\frac{b+2cf^{c+dx}}{\sqrt{b^2-4ac}}\right)}{ad\log(f)\sqrt{b^2-4ac}}-\frac{\log\left(a+bf^{c+dx}+cf^{2c+2dx}\right)}{2ad\log(f)}+\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x))^(-1),x]
```

```
[Out] x/a + (b*ArcTanh[(b + 2*c*f^(c + d*x))/Sqrt[b^2 - 4*a*c]])/(a*Sqr
t[b^2 - 4*a*c]*d*Log[f]) - Log[a + b*f^(c + d*x) + c*f^(2*c + 2*d
*x)]/(2*a*d*Log[f])
```

Rubi in Sympy [A] time = 31.7398, size = 138, normalized size = 1.47

$$\frac{bf^{-c-dx}f^{c+dx}\operatorname{atanh}\left(\frac{b+2cf^{c+dx}}{\sqrt{-4ac+b^2}}\right)}{ad\sqrt{-4ac+b^2}\log(f)}+\frac{f^{-c-dx}f^{c+dx}\log\left(f^{c+dx}\right)}{ad\log(f)}-\frac{f^{-c-dx}f^{c+dx}\log\left(a+bf^{c+dx}+cf^{2c+2dx}\right)}{2ad\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+b*f**(d*x+c)+c*f**(2*d*x+2*c)),x)
```

```
[Out] b*f**(-c - d*x)*f**(c + d*x)*atanh((b + 2*c*f**(c + d*x))/sqrt(-4
*a*c + b**2))/(a*d*sqrt(-4*a*c + b**2)*log(f)) + f**(-c - d*x)*f*
*(c + d*x)*log(f**(c + d*x))/(a*d*log(f)) - f**(-c - d*x)*f**(c +
 d*x)*log(a + b*f**(c + d*x) + c*f**(2*c + 2*d*x))/(2*a*d*log(f))
```

Mathematica [A] time = 0.218392, size = 93, normalized size = 0.99

$$-\frac{\frac{2b\tan^{-1}\left(\frac{b+2cf^{c+dx}}{\sqrt{4ac-b^2}}\right)}{d\log(f)\sqrt{4ac-b^2}}+\frac{\log\left(a+f^{c+dx}\left(b+cf^{c+dx}\right)\right)}{d\log(f)}-2x}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x))^(-1),x]
```

```
[Out] -(-2*x + (2*b*ArcTan[(b + 2*c*f^(c + d*x))/Sqrt[-b^2 + 4*a*c]])/(
Sqrt[-b^2 + 4*a*c]*d*Log[f]) + Log[a + f^(c + d*x)*(b + c*f^(c +
```

```
d*x))]/(d*Log[f]))/(2*a)
```

Maple [B] time = 0.322, size = 547, normalized size = 5.8

$$4\frac{(\ln(f))^2 acd^2x}{4(\ln(f))^2 a^2cd^2-(\ln(f))^2 ab^2d^2}-\frac{(\ln(f))^2 b^2d^2x}{4(\ln(f))^2 a^2cd^2-(\ln(f))^2 ab^2d^2}+4\frac{(\ln(f))^2 ac^2d}{4(\ln(f))^2 a^2cd^2-(\ln(f))^2 ab^2d^2}-\frac{(\ln(f))^2 b^2cd}{4(\ln(f))^2 a^2cd^2-(\ln(f))^2 ab^2d^2}-2\frac{c}{d(4ac-b^2)\ln(f)}\ln\left(f^{dx+c}-1/2\frac{-b^2+\sqrt{-4cab^2+b^4}}{cb}\right)+\frac{b^2}{2a(4ac-b^2)d\ln(f)}\ln\left(f^{dx+c}-\frac{1}{2cb}\left(-b^2+\sqrt{-4cab^2+b^4}\right)\right)+\frac{1}{2a(4ac-b^2)d\ln(f)}\ln\left(f^{dx+c}-\frac{1}{2cb}\left(-b^2+\sqrt{-4cab^2+b^4}\right)\right)\sqrt{-4cab^2+b^4}-2\frac{c}{d(4ac-b^2)\ln(f)}\ln\left(f^{dx+c}+1/2\frac{b^2+\sqrt{-4cab^2+b^4}}{cb}\right)+\frac{b^2}{2a(4ac-b^2)d\ln(f)}\ln\left(f^{dx+c}+\frac{1}{2cb}\left(b^2+\sqrt{-4cab^2+b^4}\right)\right)-\frac{1}{2a(4ac-b^2)d\ln(f)}\ln\left(f^{dx+c}+\frac{1}{2cb}\left(b^2+\sqrt{-4cab^2+b^4}\right)\right)\sqrt{-4cab^2+b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a+b*f^(d*x+c)+c*f^(2*d*x+2*c)),x)
```

```
[Out] 4/(4*ln(f)^2*a^2*c*d^2-ln(f)^2*a*b^2*d^2)*ln(f)^2*a*c*d^2*x-1/(4*
ln(f)^2*a^2*c*d^2-ln(f)^2*a*b^2*d^2)*ln(f)^2*b^2*d^2*x+4/(4*ln(f)
^2*a^2*c*d^2-ln(f)^2*a*b^2*d^2)*ln(f)^2*a*c^2*d-1/(4*ln(f)^2*a^2*
c*d^2-ln(f)^2*a*b^2*d^2)*ln(f)^2*b^2*c*d-2/(4*a*c-b^2)/d/ln(f)*ln
(f^(d*x+c)-1/2*(-b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*c+1/2/a/(4*a*c-
b^2)/d/ln(f)*ln(f^(d*x+c)-1/2*(-b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*
b^2+1/2/a/(4*a*c-b^2)/d/ln(f)*ln(f^(d*x+c)-1/2*(-b^2+(-4*a*b^2*c+
b^4)^(1/2))/c/b)*(-4*a*b^2*c+b^4)^(1/2)-2/(4*a*c-b^2)/d/ln(f)*ln(
f^(d*x+c)+1/2*(b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*c+1/2/a/(4*a*c-b^
2)/d/ln(f)*ln(f^(d*x+c)+1/2*(b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*b^2
-1/2/a/(4*a*c-b^2)/d/ln(f)*ln(f^(d*x+c)+1/2*(b^2+(-4*a*b^2*c+b^4)
^(1/2))/c/b)*(-4*a*b^2*c+b^4)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.311839, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{b^2-4ac}dx\log(f)+b\log\left(\frac{2\sqrt{b^2-4ac}c^2f^{2dx+2c}+b^3-4abc+2\left(b^2c-4ac^2+\sqrt{b^2-4ac}bc\right)f^{dx+c}+\left(b^2-2ac\right)\sqrt{b^2-4ac}}{cf^{2dx+2c}+bf^{dx+c}+a}\right)-\sqrt{b^2-4ac}\log(}{2\sqrt{b^2-4ac}ad\log(f)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(b^2 - 4*a*c)*d*x*log(f) + b*log((2*sqrt(b^2 - 4*a*c)
*c^2*f^(2*d*x + 2*c) + b^3 - 4*a*b*c + 2*(b^2*c - 4*a*c^2 + sqrt(
b^2 - 4*a*c)*b*c)*f^(d*x + c) + (b^2 - 2*a*c)*sqrt(b^2 - 4*a*c))/
(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a)) - sqrt(b^2 - 4*a*c)*log(
c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a))/(sqrt(b^2 - 4*a*c)*a*d*lo
g(f)), 1/2*(2*sqrt(-b^2 + 4*a*c)*d*x*log(f) - 2*b*arctan(-(2*sqrt
(-b^2 + 4*a*c)*c*f^(d*x + c) + sqrt(-b^2 + 4*a*c)*b)/(b^2 - 4*a*c
)) - sqrt(-b^2 + 4*a*c)*log(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a
))/(sqrt(-b^2 + 4*a*c)*a*d*log(f))]
```

Sympy [A] time = 0.648623, size = 104, normalized size = 1.11

$$\text{RootSum}\left(z^2\left(4a^2cd^2\log(f)^2 - ab^2d^2\log(f)^2\right) + z\left(4acd\log(f) - b^2d\log(f)\right) + c, \left(i \mapsto i\log\left(f^{c+dx} + \frac{-4ia^2cd\log(f) + \right.\right.\right.$$
$$+ \frac{x}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*f**(d*x+c)+c*f**(2*d*x+2*c)),x)
```

```
[Out] RootSum(_z**2*(4*a**2*c*d**2*log(f)**2 - a*b**2*d**2*log(f)**2) +
 _z*(4*a*c*d*log(f) - b**2*d*log(f)) + c, Lambda(_i, _i*log(f**(c
 + d*x) + (-4*_i*a**2*c*d*log(f) + _i*a*b**2*d*log(f) - 2*a*c + b
**2)/(b*c)))) + x/a
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{cf^{2\,dx+2\,c} + bf^{dx+c} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="giac")
```

```
[Out] integrate(1/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a), x)
```

3.522 $\int \frac{1}{a+bf^{g+hx}+cf^{2(g+hx)}}\,dx$

Optimal. Leaf size=94

$$\frac{b\tanh^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{b^2-4ac}}\right)}{ah\log(f)\sqrt{b^2-4ac}}-\frac{\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}+\frac{x}{a}$$

```
[Out] x/a + (b*ArcTanh[(b + 2*c*f^(g + h*x))/Sqrt[b^2 - 4*a*c]])/(a*Sqr
t[b^2 - 4*a*c]*h*Log[f]) - Log[a + b*f^(g + h*x) + c*f^(2*g + 2*h
*x)]/(2*a*h*Log[f])
```

Rubi [A] time = 0.151357, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292

$$\frac{b\tanh^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{b^2-4ac}}\right)}{ah\log(f)\sqrt{b^2-4ac}}-\frac{\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}+\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*f^(g + h*x) + c*f^(2*(g + h*x)))^(-1),x]
```

```
[Out] x/a + (b*ArcTanh[(b + 2*c*f^(g + h*x))/Sqrt[b^2 - 4*a*c]])/(a*Sqr
t[b^2 - 4*a*c]*h*Log[f]) - Log[a + b*f^(g + h*x) + c*f^(2*g + 2*h
*x)]/(2*a*h*Log[f])
```

Rubi in Sympy [A] time = 31.5877, size = 138, normalized size = 1.47

$$\frac{bf^{-g-hx}f^{g+hx}\operatorname{atanh}\left(\frac{b+2cf^{g+hx}}{\sqrt{-4ac+b^2}}\right)}{ah\sqrt{-4ac+b^2}\log(f)}+\frac{f^{-g-hx}f^{g+hx}\log\left(f^{g+hx}\right)}{ah\log(f)}-\frac{f^{-g-hx}f^{g+hx}\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+b*f**(h*x+g)+c*f**(2*h*x+2*g)),x)
```

```
[Out] b*f**(-g - h*x)*f**(g + h*x)*atanh((b + 2*c*f**(g + h*x))/sqrt(-4
*a*c + b**2))/(a*h*sqrt(-4*a*c + b**2)*log(f)) + f**(-g - h*x)*f*
*(g + h*x)*log(f**(g + h*x))/(a*h*log(f)) - f**(-g - h*x)*f**(g +
 h*x)*log(a + b*f**(g + h*x) + c*f**(2*g + 2*h*x))/(2*a*h*log(f))
```

Mathematica [A] time = 0.215244, size = 93, normalized size = 0.99

$$-\frac{\frac{2b\tan^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{4ac-b^2}}\right)}{h\log(f)\sqrt{4ac-b^2}}+\frac{\log\left(a+f^{g+hx}\left(b+cf^{g+hx}\right)\right)}{h\log(f)}-2x}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*f^(g + h*x) + c*f^(2*(g + h*x)))^(-1),x]
```

```
[Out] -(-2*x + (2*b*ArcTan[(b + 2*c*f^(g + h*x))/Sqrt[-b^2 + 4*a*c]])/(
Sqrt[-b^2 + 4*a*c]*h*Log[f]) + Log[a + f^(g + h*x)*(b + c*f^(g +
```

```
h*x))]/(h*Log[f]))/(2*a)
```

Maple [B] time = 0.108, size = 546, normalized size = 5.8

$$4\frac{(\ln(f))^2 ach^2x}{4(\ln(f))^2 a^2ch^2-(\ln(f))^2 ab^2h^2}-\frac{(\ln(f))^2 b^2h^2x}{4(\ln(f))^2 a^2ch^2-(\ln(f))^2 ab^2h^2}+4\frac{(\ln(f))^2 acgh}{4(\ln(f))^2 a^2ch^2-(\ln(f))^2 ab^2h^2}-\frac{(\ln(f))^2 b^2gh}{4(\ln(f))^2 a^2ch^2-(\ln(f))^2 ab^2h^2}-2\frac{c}{h(4ac-b^2)\ln(f)}\ln\left(f^{hx+g}-1/2\frac{-b^2+\sqrt{-4cab^2+b^4}}{cb}\right)+\frac{b^2}{2a(4ac-b^2)h\ln(f)}\ln\left(f^{hx+g}-\frac{1}{2cb}\left(-b^2+\sqrt{-4cab^2+b^4}\right)\right)+\frac{1}{2a(4ac-b^2)h\ln(f)}\ln\left(f^{hx+g}-\frac{1}{2cb}\left(-b^2+\sqrt{-4cab^2+b^4}\right)\right)\sqrt{-4cab^2+b^4}-2\frac{c}{h(4ac-b^2)\ln(f)}\ln\left(f^{hx+g}+1/2\frac{b^2+\sqrt{-4cab^2+b^4}}{cb}\right)+\frac{b^2}{2a(4ac-b^2)h\ln(f)}\ln\left(f^{hx+g}+\frac{1}{2cb}\left(b^2+\sqrt{-4cab^2+b^4}\right)\right)-\frac{1}{2a(4ac-b^2)h\ln(f)}\ln\left(f^{hx+g}+\frac{1}{2cb}\left(b^2+\sqrt{-4cab^2+b^4}\right)\right)\sqrt{-4cab^2+b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*f^(h*x+g)+c*f^(2*h*x+2*g)),x)
```

```
[Out] 4/(4*ln(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*a*c*h^2*x-1/(4*
ln(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*b^2*h^2*x+4/(4*ln(f)
^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*a*c*g*h-1/(4*ln(f)^2*a^2*
c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*b^2*g*h-2/(4*a*c-b^2)/h/ln(f)*ln
(f^(h*x+g)-1/2*(-b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*c+1/2/a/(4*a*c-
b^2)/h/ln(f)*ln(f^(h*x+g)-1/2*(-b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*
b^2+1/2/a/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g)-1/2*(-b^2+(-4*a*b^2*c+
b^4)^(1/2))/c/b)*(-4*a*b^2*c+b^4)^(1/2)-2/(4*a*c-b^2)/h/ln(f)*ln(
f^(h*x+g)+1/2*(b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*c+1/2/a/(4*a*c-b^
2)/h/ln(f)*ln(f^(h*x+g)+1/2*(b^2+(-4*a*b^2*c+b^4)^(1/2))/c/b)*b^2
-1/2/a/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g)+1/2*(b^2+(-4*a*b^2*c+b^4)
^(1/2))/c/b)*(-4*a*b^2*c+b^4)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.364835, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{b^2-4ac}\,chx\log(f)+b\log\left(\frac{2\sqrt{b^2-4ac}\,c^2f^{2hx+2g}+b^3-4abc+2\left(b^2c-4ac^2+\sqrt{b^2-4ac}\,bc\right)f^{hx+g}+\left(b^2-2ac\right)\sqrt{b^2-4ac}}{cf^{2hx+2g}+bf^{hx+g}+a}\right)-\sqrt{b^2-4ac}\log(}{2\sqrt{b^2-4ac}\,cah\log(f)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(b^2 - 4*a*c)*h*x*log(f) + b*log((2*sqrt(b^2 - 4*a*c)
*c^2*f^(2*h*x + 2*g) + b^3 - 4*a*b*c + 2*(b^2*c - 4*a*c^2 + sqrt(
b^2 - 4*a*c)*b*c)*f^(h*x + g) + (b^2 - 2*a*c)*sqrt(b^2 - 4*a*c))/
(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a)) - sqrt(b^2 - 4*a*c)*log(
c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a))/(sqrt(b^2 - 4*a*c)*a*h*lo
g(f)), 1/2*(2*sqrt(-b^2 + 4*a*c)*h*x*log(f) - 2*b*arctan(-(2*sqrt
(-b^2 + 4*a*c)*c*f^(h*x + g) + sqrt(-b^2 + 4*a*c)*b)/(b^2 - 4*a*c
)) - sqrt(-b^2 + 4*a*c)*log(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a
))/(sqrt(-b^2 + 4*a*c)*a*h*log(f))]
```

Sympy [A] time = 0.608401, size = 112, normalized size = 1.19

$$\operatorname{RootSum}\left(z^2\left(4a^2ch^2\log(f)^2 - ab^2h^2\log(f)^2\right) + z\left(4ach\log(f) - b^2h\log(f)\right) + c, \left(i \mapsto i\log\left(e^{\frac{(2g+2hx)\log(f)}{2}} + \frac{-4ia^2ch\log}{}\right.\right.\right.$$
$$+\frac{x}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+b*f**(h*x+g)+c*f**(2*h*x+2*g)),x)
```

```
[Out] RootSum(_z**2*(4*a**2*c*h**2*log(f)**2 - a*b**2*h**2*log(f)**2) +
 _z*(4*a*c*h*log(f) - b**2*h*log(f)) + c, Lambda(_i, _i*log(exp((
2*g + 2*h*x)*log(f)/2) + (-4*_i*a**2*c*h*log(f) + _i*a*b**2*h*log
(f) - 2*a*c + b**2)/(b*c)))) + x/a
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{cf^{2\,hx+2\,g} + bf^{hx+g} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm="giac")
```

```
[Out] integrate(1/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a), x)
```

3.523 $\int \frac{x}{1+2f^{c+dx}+f^{2c+2dx}}\,dx$

Optimal. Leaf size=96

$$-\frac{\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^2\log^2(f)}+\frac{\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{x}{d\log(f)\left(f^{c+dx}+1\right)}-\frac{x}{d\log(f)}+\frac{x^2}{2}$$

```
[Out] x^2/2 - x/(d*Log[f]) + x/(d*(1 + f^(c + d*x))*Log[f]) + Log[1 + f
^(c + d*x)]/(d^2*Log[f]^2) - (x*Log[1 + f^(c + d*x)])/(d*Log[f])
- PolyLog[2, -f^(c + d*x)]/(d^2*Log[f]^2)
```

Rubi [A] time = 0.369568, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 11, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.44

$$-\frac{\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^2\log^2(f)}+\frac{\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{x}{d\log(f)\left(f^{c+dx}+1\right)}-\frac{x}{d\log(f)}+\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(1 + 2*f^(c + d*x) + f^(2*c + 2*d*x)),x]
```

```
[Out] x^2/2 - x/(d*Log[f]) + x/(d*(1 + f^(c + d*x))*Log[f]) + Log[1 + f
^(c + d*x)]/(d^2*Log[f]^2) - (x*Log[1 + f^(c + d*x)])/(d*Log[f])
- PolyLog[2, -f^(c + d*x)]/(d^2*Log[f]^2)
```

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

$$\int \frac{x}{2f^{c+dx}+f^{2c+2dx}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(1+2*f**(d*x+c)+f**(2*d*x+2*c)),x)
```

```
[Out] Integral(x/(2*f**(c + d*x) + f**(2*c + 2*d*x) + 1), x)
```

Mathematica [A] time = 0.249826, size = 88, normalized size = 0.92

$$-\frac{\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^2\log^2(f)}+\frac{\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}+\frac{1}{2}x\left(\frac{2}{d\log(f)f^{c+dx}+d\log(f)}+x\right)-\frac{x\left(\log\left(f^{c+dx}+1\right)+1\right)}{d\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(1 + 2*f^(c + d*x) + f^(2*c + 2*d*x)),x]
```

```
[Out] (x*(x + 2/(d*Log[f] + d*f^(c + d*x)*Log[f])))/2 + Log[1 + f^(c +
d*x)]/(d^2*Log[f]^2) - (x*(1 + Log[1 + f^(c + d*x)]))/(d*Log[f])
- PolyLog[2, -f^(c + d*x)]/(d^2*Log[f]^2)
```

Maple [A] time = 0.044, size = 134, normalized size = 1.4

$$\frac{x}{d\left(1+f^{dx+c}\right)\ln\left(f\right)}+\frac{x^{2}}{2}+\frac{cx}{d}+\frac{c^{2}}{2\,d^{2}}-\frac{x\ln\left(1+f^{dx+c}\right)}{d\ln\left(f\right)}-\frac{polylog\left(2,-f^{dx+c}\right)}{\left(\ln\left(f\right)\right)^{2}d^{2}}+\frac{\ln\left(1+f^{dx+c}\right)}{\left(\ln\left(f\right)\right)^{2}d^{2}}-\frac{\ln\left(f^{dx+c}\right)}{\left(\ln\left(f\right)\right)^{2}d^{2}}-\frac{c\ln\left(f^{dx+c}\right)}{d^{2}\ln\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(1+2*f^(d*x+c)+f^(2*d*x+2*c)),x)
```

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

Maxima [A] time = 0.802529, size = 154, normalized size = 1.6

$$\frac{x}{df^{dx}f^{c}\log\left(f\right)+d\log\left(f\right)}+\frac{\log\left(f^{dx}\right)^{2}}{2\,d^{2}\log\left(f\right)^{2}}-\frac{\log\left(f^{dx}f^{c}+1\right)\log\left(f^{dx}\right)+\mathrm{Li}_{2}\left(-f^{dx}f^{c}\right)}{d^{2}\log\left(f\right)^{2}}+\frac{\log\left(f^{dx}f^{c}+1\right)}{d^{2}\log\left(f\right)^{2}}-\frac{\log\left(f^{dx}\right)}{d^{2}\log\left(f\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="maxima")
```

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

Fricas [A] time = 0.267916, size = 193, normalized size = 2.01

$$\frac{\left(d^{2}x^{2}-c^{2}\right)\log\left(f\right)^{2}+\left(\left(d^{2}x^{2}-c^{2}\right)\log\left(f\right)^{2}-2\left(dx+c\right)\log\left(f\right)\right)f^{dx+c}-2\left(f^{dx+c}+1\right)\mathrm{Li}_{2}\left(-f^{dx+c}\right)-2\left(dx\log\left(f\right)+\left(dx\log\right.\right.}{2\left(d^{2}f^{dx+c}\log\left(f\right)^{2}+d^{2}\log\left(f\right)^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="fricas")
```

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

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

$$\frac{x}{df^{c+dx}\log\left(f\right)+d\log\left(f\right)}+\frac{\int\frac{dx\log\left(f\right)}{e^{c\log\left(f\right)}e^{dx\log\left(f\right)}+1}\,dx+\int\left(-\frac{1}{e^{c\log\left(f\right)}e^{dx\log\left(f\right)}+1}\right)\,dx}{d\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(1+2*f**(d*x+c)+f**(2*d*x+2*c)),x)
```

```
[Out] x/(d*f**(c + d*x)*log(f) + d*log(f)) + (Integral(d*x*log(f)/(exp(
c*log(f))*exp(d*x*log(f)) + 1), x) + Integral(-1/(exp(c*log(f))*e
xp(d*x*log(f)) + 1), x))/(d*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{f^{2\,dx+2\,c}+2\,f^{dx+c}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="giac")
```

```
[Out] integrate(x/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1), x)
```

3.524 $\int \frac{x}{a+bf^{c+dx}+cf^{2c+2dx}}\,dx$

Optimal. Leaf size=338

$$-\frac{2c\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{2c\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{2cx\log\left(\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{2cx\log\left(\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{cx^2}{-b\sqrt{b^2-4ac}-4ac+b^2}-\frac{cx^2}{b\sqrt{b^2-4ac}-4ac+b^2}$$

```
[Out] -((c*x^2)/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (c*x^2)/(b^2 - 4
*a*c + b*Sqrt[b^2 - 4*a*c]) - (2*c*x*Log[1 + (2*c*f^(c + d*x))/(b
 - Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c]
)*d*Log[f]) + (2*c*x*Log[1 + (2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*
a*c])])/(Sqrt[b^2 - 4*a*c]*(b + Sqrt[b^2 - 4*a*c])*d*Log[f]) - (2
*c*PolyLog[2, (-2*c*f^(c + d*x))/(b - Sqrt[b^2 - 4*a*c])])/(Sqrt[
b^2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2) + (2*c*PolyLog
[2, (-2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*
c]*(b + Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2)
```

Rubi [A] time = 1.03872, antiderivative size = 338, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$

$$-\frac{2c\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{2c\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{2cx\log\left(\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{2cx\log\left(\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{cx^2}{-b\sqrt{b^2-4ac}-4ac+b^2}-\frac{cx^2}{b\sqrt{b^2-4ac}-4ac+b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x)),x]
```

```
[Out] -((c*x^2)/(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (c*x^2)/(b^2 - 4
*a*c + b*Sqrt[b^2 - 4*a*c]) - (2*c*x*Log[1 + (2*c*f^(c + d*x))/(b
 - Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c]
)*d*Log[f]) + (2*c*x*Log[1 + (2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*
a*c])])/(Sqrt[b^2 - 4*a*c]*(b + Sqrt[b^2 - 4*a*c])*d*Log[f]) - (2
*c*PolyLog[2, (-2*c*f^(c + d*x))/(b - Sqrt[b^2 - 4*a*c])])/(Sqrt[
b^2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2) + (2*c*PolyLog
[2, (-2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*
c]*(b + Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2)
```

Rubi in Sympy [A] time = 54.5952, size = 246, normalized size = 0.73

$$\frac{2cx\log\left(1+\frac{f^{-c-dx}\left(b+\sqrt{-4ac+b^2}\right)}{2c}\right)}{d\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)\log(f)}+\frac{2cx\log\left(1+\frac{f^{-c-dx}\left(b-\sqrt{-4ac+b^2}\right)}{2c}\right)}{d\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)\log(f)}-\frac{2c\operatorname{Li}_2\left(-\frac{f^{-c-dx}\left(b+\sqrt{-4ac+b^2}\right)}{2c}\right)}{d^2\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)\log(f)^2}-\frac{2c\operatorname{Li}_2\left(-\frac{f^{-c-dx}\left(b-\sqrt{-4ac+b^2}\right)}{2c}\right)}{d^2\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(a+b*f**(d*x+c)+c*f**(2*d*x+2*c)),x)
```

```
[Out] 2*c*x*log(1 + f**(-c - d*x)*(b + sqrt(-4*a*c + b**2))/(2*c))/(d*(
-4*a*c + b**2 + b*sqrt(-4*a*c + b**2))*log(f)) + 2*c*x*log(1 + f*
*(-c - d*x)*(b - sqrt(-4*a*c + b**2))/(2*c))/(d*(-4*a*c + b**2 -
b*sqrt(-4*a*c + b**2))*log(f)) - 2*c*polylog(2, -f**(-c - d*x)*(b
 + sqrt(-4*a*c + b**2))/(2*c))/(d**2*(-4*a*c + b**2 + b*sqrt(-4*a
*c + b**2))*log(f)**2) - 2*c*polylog(2, -f**(-c - d*x)*(b - sqrt(
-4*a*c + b**2))/(2*c))/(d**2*(-4*a*c + b**2 - b*sqrt(-4*a*c + b**
2))*log(f)**2)
```

Mathematica [F] time = 179.997, size = 0, normalized size = 0.

$Aborted

Verification is Not applicable to the result.

```
[In]  Integrate[x/(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x)),x]
```

```
[Out] $Aborted
```

Maple [C] time = 0.037, size = 836, normalized size = 2.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(a+b*f^(d*x+c)+c*f^(2*d*x+2*c)),x)
```

```
[Out] 1/2*x^2/a+1/d/a*c*x+1/2/d^2/a*c^2-1/2/ln(f)/d/a*ln((-2*c*f^(d*x+c
)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*x-1/2/ln(f)/d^2/
a*ln((-2*c*f^(d*x+c)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)
))*c-1/2/ln(f)/d/a/(-4*a*c+b^2)^(1/2)*ln((-2*c*f^(d*x+c)+(-4*a*c+
b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b*x-1/2/ln(f)/d^2/a/(-4*a*
c+b^2)^(1/2)*ln((-2*c*f^(d*x+c)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c
+b^2)^(1/2)))*b*c-1/2/ln(f)/d/a*ln((2*c*f^(d*x+c)+(-4*a*c+b^2)^(1
/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*x-1/2/ln(f)/d^2/a*ln((2*c*f^(d*x+c
)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*c+1/2/ln(f)/d/a/(
-4*a*c+b^2)^(1/2)*ln((2*c*f^(d*x+c)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*
a*c+b^2)^(1/2)))*b*x+1/2/ln(f)/d^2/a/(-4*a*c+b^2)^(1/2)*ln((2*c*f
^(d*x+c)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b*c-1/2/ln
(f)^2/d^2/a*dilog((2*c*f^(d*x+c)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c
+b^2)^(1/2)))+1/2/ln(f)^2/d^2/a/(-4*a*c+b^2)^(1/2)*dilog((2*c*f^(
d*x+c)+(-4*a*c+b^2)^(1/2)+b)/(b+(-4*a*c+b^2)^(1/2)))*b-1/2/ln(f)^
2/d^2/a*dilog((-2*c*f^(d*x+c)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b
^2)^(1/2)))-1/2/ln(f)^2/d^2/a/(-4*a*c+b^2)^(1/2)*dilog((-2*c*f^(d
```

```
*x+c)+(-4*a*c+b^2)^(1/2)-b)/(-b+(-4*a*c+b^2)^(1/2)))*b-1/ln(f)/d^
2*c/a*ln(f^(d*x+c))+1/2/ln(f)/d^2*c/a*ln(a+b*f^(d*x+c)+c*(f^(d*x+
c))^2)+1/ln(f)/d^2*c/a*b/(4*a*c-b^2)^(1/2)*arctan((b+2*c*f^(d*x+c
))/(4*a*c-b^2)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.287371, size = 752, normalized size = 2.22

$$\left(b^2-4\,ac\right)d^2x^2\log\left(f\right)^2+\left(ab\sqrt{\frac{b^2-4\,ac}{a^2}}-b^2+4\,ac\right)\mathrm{Li}_2\left(-\frac{2\,cf^{dx+c}+a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}{a\sqrt{\frac{b^2-4\,ac}{a^2}}+b}+1\right)-\left(ab\sqrt{\frac{b^2-4\,ac}{a^2}}+b^2-4\,ac\right)\mathrm{Li}_2\left(\frac{2\,cf^{dx+c}}{a\sqrt{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="fricas")
```

```
[Out] 1/2*((b^2 - 4*a*c)*d^2*x^2*log(f)^2 + (a*b*sqrt((b^2 - 4*a*c)/a^2
) - b^2 + 4*a*c)*dilog(-(2*c*f^(d*x + c) + a*sqrt((b^2 - 4*a*c)/a
^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) + b) + 1) - (a*b*sqrt((b^2 -
4*a*c)/a^2) + b^2 - 4*a*c)*dilog((2*c*f^(d*x + c) - a*sqrt((b^2 -
 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b) + 1) - (a*b*c*s
qrt((b^2 - 4*a*c)/a^2)*log(f) - (b^2*c - 4*a*c^2)*log(f))*log(2*c
*f^(d*x + c) + a*sqrt((b^2 - 4*a*c)/a^2) + b) + (a*b*c*sqrt((b^2
- 4*a*c)/a^2)*log(f) + (b^2*c - 4*a*c^2)*log(f))*log(2*c*f^(d*x +
 c) - a*sqrt((b^2 - 4*a*c)/a^2) + b) + ((a*b*d*x + a*b*c)*sqrt((b
^2 - 4*a*c)/a^2)*log(f) - (b^2*c - 4*a*c^2 + (b^2 - 4*a*c)*d*x)*l
og(f))*log((2*c*f^(d*x + c) + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*s
qrt((b^2 - 4*a*c)/a^2) + b)) - ((a*b*d*x + a*b*c)*sqrt((b^2 - 4*a
*c)/a^2)*log(f) + (b^2*c - 4*a*c^2 + (b^2 - 4*a*c)*d*x)*log(f))*l
og(-(2*c*f^(d*x + c) - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^
2 - 4*a*c)/a^2) - b)))/((a*b^2 - 4*a^2*c)*d^2*log(f)^2)
```

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

$$\int \frac{x}{a+bf^cf^{dx}+cf^{2c}f^{2dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a+b*f**(d*x+c)+c*f**(2*d*x+2*c)),x)
```

```
[Out] Integral(x/(a + b*f**c*f**(d*x) + c*f**(2*c)*f**(2*d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{cf^{2\,dx+2\,c}+bf^{dx+c}+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="giac")
```

```
[Out] integrate(x/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a), x)
```

3.525 $\int \frac{x^2}{1+2f^{c+dx}+f^{2c+2dx}}\,dx$

Optimal. Leaf size=145

$$\frac{2\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^3\log^3(f)}+\frac{2\text{PolyLog}\left(3,-f^{c+dx}\right)}{d^3\log^3(f)}-\frac{2x\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^2\log^2(f)}+\frac{2x\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x^2\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{x^2}{d\log(f)\left(f^{c+dx}+1\right)}-\frac{x^2}{d\log(f)}+\frac{x^3}{3}$$

```
[Out] x^3/3 - x^2/(d*Log[f]) + x^2/(d*(1 + f^(c + d*x))*Log[f]) + (2*x*
Log[1 + f^(c + d*x)])/(d^2*Log[f]^2) - (x^2*Log[1 + f^(c + d*x)])
/(d*Log[f]) + (2*PolyLog[2, -f^(c + d*x)])/(d^3*Log[f]^3) - (2*x*
PolyLog[2, -f^(c + d*x)])/(d^2*Log[f]^2) + (2*PolyLog[3, -f^(c +
d*x)])/(d^3*Log[f]^3)
```

Rubi [A] time = 0.646586, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 10, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.37

$$\frac{2\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^3\log^3(f)}+\frac{2\text{PolyLog}\left(3,-f^{c+dx}\right)}{d^3\log^3(f)}-\frac{2x\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^2\log^2(f)}+\frac{2x\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x^2\log\left(f^{c+dx}+1\right)}{d\log(f)}+\frac{x^2}{d\log(f)\left(f^{c+dx}+1\right)}-\frac{x^2}{d\log(f)}+\frac{x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(1 + 2*f^(c + d*x) + f^(2*c + 2*d*x)),x]
```

```
[Out] x^3/3 - x^2/(d*Log[f]) + x^2/(d*(1 + f^(c + d*x))*Log[f]) + (2*x*
Log[1 + f^(c + d*x)])/(d^2*Log[f]^2) - (x^2*Log[1 + f^(c + d*x)])
/(d*Log[f]) + (2*PolyLog[2, -f^(c + d*x)])/(d^3*Log[f]^3) - (2*x*
PolyLog[2, -f^(c + d*x)])/(d^2*Log[f]^2) + (2*PolyLog[3, -f^(c +
d*x)])/(d^3*Log[f]^3)
```

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

$$\int \frac{x^2}{2f^{c+dx}+f^{2c+2dx}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(1+2*f**(d*x+c)+f**(2*d*x+2*c)),x)
```

```
[Out] Integral(x**2/(2*f**(c + d*x) + f**(2*c + 2*d*x) + 1), x)
```

Mathematica [A] time = 0.347866, size = 123, normalized size = 0.85

$$\frac{6\text{PolyLog}\left(3,-f^{c+dx}\right)+(6-6dx\log(f))\text{PolyLog}\left(2,-f^{c+dx}\right)-\frac{3d^2x^2\log^2(f)\left(f^{c+dx}+\left(f^{c+dx}+1\right)\log\left(f^{c+dx}+1\right)\right)}{f^{c+dx}+1}+6dx\log(f)\log\left(f\right.}{3d^3\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(1 + 2*f^(c + d*x) + f^(2*c + 2*d*x)),x]
```

```
[Out] (d^3*x^3*Log[f]^3 + 6*d*x*Log[f]*Log[1 + f^(c + d*x)] - (3*d^2*x^
2*Log[f]^2*(f^(c + d*x) + (1 + f^(c + d*x))*Log[1 + f^(c + d*x)])
)/(1 + f^(c + d*x)) + (6 - 6*d*x*Log[f])*PolyLog[2, -f^(c + d*x)]
 + 6*PolyLog[3, -f^(c + d*x)])/(3*d^3*Log[f]^3)
```

Maple [A] time = 0.039, size = 221, normalized size = 1.5

$$\frac{x^2}{d\left(1+f^{dx+c}\right)\ln(f)}+\frac{x^3}{3}-\frac{c^2x}{d^2}-\frac{2c^3}{3d^3}-\frac{x^2\ln\left(1+f^{dx+c}\right)}{d\ln(f)}-2\frac{x\,polylog\left(2,-f^{dx+c}\right)}{(\ln(f))^2d^2}+2\frac{polylog\left(3,-f^{dx+c}\right)}{d^3(\ln(f))^3}+\frac{c^2\ln\left(f^{dx+c}\right)}{d^3\ln(f)}-\frac{x^2}{d\ln(f)}-2\frac{cx}{d^2\ln(f)}-\frac{c^2}{d^3\ln(f)}+2\frac{x\ln\left(1+f^{dx+c}\right)}{(\ln(f))^2d^2}+2\frac{polylog\left(2,-f^{dx+c}\right)}{d^3(\ln(f))^3}+2\frac{c\ln\left(f^{dx+c}\right)}{d^3(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(1+2*f^(d*x+c)+f^(2*d*x+2*c)),x)
```

```
[Out] x^2/d/(1+f^(d*x+c))/ln(f)+1/3*x^3-1/d^2*c^2*x-2/3/d^3*c^3-x^2*ln(
1+f^(d*x+c))/d/ln(f)-2*x*polylog(2,-f^(d*x+c))/d^2/ln(f)^2+2*poly
log(3,-f^(d*x+c))/d^3/ln(f)^3+1/d^3/ln(f)*c^2*ln(f^(d*x+c))-x^2/d
/ln(f)-2/d^2/ln(f)*c*x-1/d^3/ln(f)*c^2+2*x*ln(1+f^(d*x+c))/d^2/ln
(f)^2+2*polylog(2,-f^(d*x+c))/d^3/ln(f)^3+2/d^3/ln(f)^2*c*ln(f^(d
*x+c))
```

Maxima [A] time = 0.78877, size = 211, normalized size = 1.46

$$\frac{x^2}{df^{dx}f^c\log(f)+d\log(f)}-\frac{\log\left(f^{dx}f^c+1\right)\log\left(f^{dx}\right)^2+2\,\mathrm{Li}_2\left(-f^{dx}f^c\right)\log\left(f^{dx}\right)-2\,\mathrm{Li}_3(-f^{dx}f^c)}{d^3\log(f)^3}+\frac{\log\left(f^{dx}\right)^3-3\log\left(f^{dx}\right)^2}{3d^3\log(f)^3}+\frac{2\left(\log\left(f^{dx}f^c+1\right)\log\left(f^{dx}\right)+\mathrm{Li}_2\left(-f^{dx}f^c\right)\right)}{d^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="maxima")
```

```
[Out] x^2/(d*f^(d*x)*f^c*log(f) + d*log(f)) - (log(f^(d*x)*f^c + 1)*log
(f^(d*x))^2 + 2*dilog(-f^(d*x)*f^c)*log(f^(d*x)) - 2*polylog(3, -
f^(d*x)*f^c))/(d^3*log(f)^3) + 1/3*(log(f^(d*x))^3 - 3*log(f^(d*x
))^2)/(d^3*log(f)^3) + 2*(log(f^(d*x)*f^c + 1)*log(f^(d*x)) + dil
og(-f^(d*x)*f^c))/(d^3*log(f)^3)
```

Fricas [A] time = 0.306643, size = 284, normalized size = 1.96

$$\frac{3c^2\log(f)^2+\left(d^3x^3+c^3\right)\log(f)^3+\left(\left(d^3x^3+c^3\right)\log(f)^3-3\left(d^2x^2-c^2\right)\log(f)^2\right)f^{dx+c}-6\left(dx\log(f)+(dx\log(f)-1)f\right.}{3\left(d^3f^{dx}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="fricas")
```

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

```
f) + (d*x*log(f) - 1)*f^(d*x + c) - 1)*dilog(-f^(d*x + c)) - 3*(d
^2*x^2*log(f)^2 - 2*d*x*log(f) + (d^2*x^2*log(f)^2 - 2*d*x*log(f)
)*f^(d*x + c))*log(f^(d*x + c) + 1) + 6*(f^(d*x + c) + 1)*polylog
(3, -f^(d*x + c)))/(d^3*f^(d*x + c)*log(f)^3 + d^3*log(f)^3)
```

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

$$\frac{x^2}{df^{c+dx}\log(f)+d\log(f)}+\frac{\int\left(-\frac{2x}{e^{c\log(f)}e^{dx\log(f)}+1}\right)\,dx+\int\frac{dx^2\log(f)}{e^{c\log(f)}e^{dx\log(f)}+1}\,dx}{d\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(1+2*f**(d*x+c)+f**(2*d*x+2*c)),x)
```

```
[Out] x**2/(d*f**(c + d*x)*log(f) + d*log(f)) + (Integral(-2*x/(exp(c*l
og(f))*exp(d*x*log(f)) + 1), x) + Integral(d*x**2*log(f)/(exp(c*l
og(f))*exp(d*x*log(f)) + 1), x))/(d*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^2}{f^{2\,dx+2\,c}+2\,f^{dx+c}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1),x, algorithm="giac")
```

```
[Out] integrate(x^2/(f^(2*d*x + 2*c) + 2*f^(d*x + c) + 1), x)
```

3.526 $\int \frac{x^2}{a+bf^{c+dx}+cf^{2c+2dx}}\,dx$

Optimal. Leaf size=484

$$\frac{4c\,\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}\right)}{d^3\log^3(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}-\frac{4c\,\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}\right)}{d^3\log^3(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{4cx\,\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{4cx\,\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{2cx^2\log\left(\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{2cx^2\log\left(\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{2cx^3}{3\left(-b\sqrt{b^2-4ac}-4ac+b^2\right)}-\frac{2cx^3}{3\left(b\sqrt{b^2-4ac}-4ac+b^2\right)}$$

```
[Out] (-2*c*x^3)/(3*(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (2*c*x^3)/(3
*(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c])) - (2*c*x^2*Log[1 + (2*c*f^(
c + d*x))/(b - Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b - Sqrt[
b^2 - 4*a*c])*d*Log[f]) + (2*c*x^2*Log[1 + (2*c*f^(c + d*x))/(b +
 Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b + Sqrt[b^2 - 4*a*c])*
d*Log[f]) - (4*c*x*PolyLog[2, (-2*c*f^(c + d*x))/(b - Sqrt[b^2 -
4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2
) + (4*c*x*PolyLog[2, (-2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*a*c])]
)/(Sqrt[b^2 - 4*a*c]*(b + Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2) + (4*c
*PolyLog[3, (-2*c*f^(c + d*x))/(b - Sqrt[b^2 - 4*a*c])])/(Sqrt[b^
2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c])*d^3*Log[f]^3) - (4*c*PolyLog[3
, (-2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]
*(b + Sqrt[b^2 - 4*a*c])*d^3*Log[f]^3)
```

Rubi [A] time = 1.40253, antiderivative size = 484, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207

$$\frac{4c\,\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}\right)}{d^3\log^3(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}-\frac{4c\,\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}\right)}{d^3\log^3(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{4cx\,\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{4cx\,\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}\right)}{d^2\log^2(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{2cx^2\log\left(\frac{2cf^{c+dx}}{b-\sqrt{b^2-4ac}}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}\right)}+\frac{2cx^2\log\left(\frac{2cf^{c+dx}}{\sqrt{b^2-4ac}+b}+1\right)}{d\log(f)\sqrt{b^2-4ac}\left(\sqrt{b^2-4ac}+b\right)}-\frac{2cx^3}{3\left(-b\sqrt{b^2-4ac}-4ac+b^2\right)}-\frac{2cx^3}{3\left(b\sqrt{b^2-4ac}-4ac+b^2\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x)),x]
```


```
[Out] (-2*c*x^3)/(3*(b^2 - 4*a*c - b*Sqrt[b^2 - 4*a*c])) - (2*c*x^3)/(3
*(b^2 - 4*a*c + b*Sqrt[b^2 - 4*a*c])) - (2*c*x^2*Log[1 + (2*c*f^(
c + d*x))/(b - Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b - Sqrt[
b^2 - 4*a*c])*d*Log[f]) + (2*c*x^2*Log[1 + (2*c*f^(c + d*x))/(b +
 Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b + Sqrt[b^2 - 4*a*c])*
d*Log[f]) - (4*c*x*PolyLog[2, (-2*c*f^(c + d*x))/(b - Sqrt[b^2 -
4*a*c])])/(Sqrt[b^2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2
) + (4*c*x*PolyLog[2, (-2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*a*c])]
```

```
)/(Sqrt[b^2 - 4*a*c]*(b + Sqrt[b^2 - 4*a*c])*d^2*Log[f]^2) + (4*c
*PolyLog[3, (-2*c*f^(c + d*x))/(b - Sqrt[b^2 - 4*a*c])])/(Sqrt[b^
2 - 4*a*c]*(b - Sqrt[b^2 - 4*a*c])*d^3*Log[f]^3) - (4*c*PolyLog[3
, (-2*c*f^(c + d*x))/(b + Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]
*(b + Sqrt[b^2 - 4*a*c])*d^3*Log[f]^3)
```

Rubi in Sympy [A] time = 98.9202, size = 379, normalized size = 0.78

$$\frac{2cx^2\log\left(1+\frac{f^{-c-dx}\left(b+\sqrt{-4ac+b^2}\right)}{2c}\right)}{d\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)\log(f)}+\frac{2cx^2\log\left(1+\frac{f^{-c-dx}\left(b-\sqrt{-4ac+b^2}\right)}{2c}\right)}{d\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)\log(f)}-\frac{4cx\operatorname{Li}_2\left(-\frac{f^{-c-dx}\left(b+\sqrt{-4ac+b^2}\right)}{2c}\right)}{d^2\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)\log(f)^2}-\frac{4cx\operatorname{Li}_2\left(-\frac{f^{-c-dx}\left(b-\sqrt{-4ac+b^2}\right)}{2c}\right)}{d^2\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)\log(f)^2}-\frac{4c\operatorname{Li}_3\left(-\frac{f^{-c-dx}\left(b+\sqrt{-4ac+b^2}\right)}{2c}\right)}{d^3\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)\log(f)^3}-\frac{4c\operatorname{Li}_3\left(-\frac{f^{-c-dx}\left(b-\sqrt{-4ac+b^2}\right)}{2c}\right)}{d^3\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(a+b*f**(d*x+c)+c*f**(2*d*x+2*c)),x)
```

```
[Out] 2*c*x**2*log(1 + f**(-c - d*x)*(b + sqrt(-4*a*c + b**2))/(2*c))/(
d*(-4*a*c + b**2 + b*sqrt(-4*a*c + b**2))*log(f)) + 2*c*x**2*log(
1 + f**(-c - d*x)*(b - sqrt(-4*a*c + b**2))/(2*c))/(d*(-4*a*c + b
**2 - b*sqrt(-4*a*c + b**2))*log(f)) - 4*c*x*polylog(2, -f**(-c -
 d*x)*(b + sqrt(-4*a*c + b**2))/(2*c))/(d**2*(-4*a*c + b**2 + b*s
qrt(-4*a*c + b**2))*log(f)**2) - 4*c*x*polylog(2, -f**(-c - d*x)*
(b - sqrt(-4*a*c + b**2))/(2*c))/(d**2*(-4*a*c + b**2 - b*sqrt(-4
*a*c + b**2))*log(f)**2) - 4*c*polylog(3, -f**(-c - d*x)*(b + sqr
t(-4*a*c + b**2))/(2*c))/(d**3*(-4*a*c + b**2 + b*sqrt(-4*a*c + b
**2))*log(f)**3) - 4*c*polylog(3, -f**(-c - d*x)*(b - sqrt(-4*a*c
 + b**2))/(2*c))/(d**3*(-4*a*c + b**2 - b*sqrt(-4*a*c + b**2))*lo
g(f)**3)
```

Mathematica [A] time = 19.388, size = 0, normalized size = 0.

$$\int \frac{x^2}{a+bf^{c+dx}+cf^{2c+2dx}}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[x^2/(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x)),x]
```

```
[Out] Integrate[x^2/(a + b*f^(c + d*x) + c*f^(2*c + 2*d*x)), x]
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int \frac{x^2}{a+bf^{dx+c}+cf^{2\,dx+2\,c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(a+b*f^(d*x+c)+c*f^(2*d*x+2*c)),x)

[Out] int(x^2/(a+b*f^(d*x+c)+c*f^(2*d*x+2*c)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.302167, size = 1018, normalized size = 2.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="fricas")

[Out] 1/6*(2*(b^2 - 4*a*c)*d^3*x^3*log(f)^3 + 6*(a*b*d*x*sqrt((b^2 - 4*
a*c)/a^2)*log(f) - (b^2 - 4*a*c)*d*x*log(f))*dilog(-(2*c*f^(d*x +
 c) + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) +
 b) + 1) - 6*(a*b*d*x*sqrt((b^2 - 4*a*c)/a^2)*log(f) + (b^2 - 4*a
*c)*d*x*log(f))*dilog((2*c*f^(d*x + c) - a*sqrt((b^2 - 4*a*c)/a^2
) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b) + 1) + 3*(a*b*c^2*sqrt((b^
2 - 4*a*c)/a^2)*log(f)^2 - (b^2*c^2 - 4*a*c^3)*log(f)^2)*log(2*c*
f^(d*x + c) + a*sqrt((b^2 - 4*a*c)/a^2) + b) - 3*(a*b*c^2*sqrt((b
^2 - 4*a*c)/a^2)*log(f)^2 + (b^2*c^2 - 4*a*c^3)*log(f)^2)*log(2*c
*f^(d*x + c) - a*sqrt((b^2 - 4*a*c)/a^2) + b) + 3*((a*b*d^2*x^2 -
 a*b*c^2)*sqrt((b^2 - 4*a*c)/a^2)*log(f)^2 - ((b^2 - 4*a*c)*d^2*x
^2 - b^2*c^2 + 4*a*c^3)*log(f)^2)*log((2*c*f^(d*x + c) + a*sqrt((
b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) + b)) - 3*((a*b
*d^2*x^2 - a*b*c^2)*sqrt((b^2 - 4*a*c)/a^2)*log(f)^2 + ((b^2 - 4*
a*c)*d^2*x^2 - b^2*c^2 + 4*a*c^3)*log(f)^2)*log(-(2*c*f^(d*x + c)
 - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b)
) - 6*(a*b*sqrt((b^2 - 4*a*c)/a^2) - b^2 + 4*a*c)*polylog(3, -2*c
*f^(d*x + c)/(a*sqrt((b^2 - 4*a*c)/a^2) + b)) + 6*(a*b*sqrt((b^2
- 4*a*c)/a^2) + b^2 - 4*a*c)*polylog(3, 2*c*f^(d*x + c)/(a*sqrt((
b^2 - 4*a*c)/a^2) - b)))/((a*b^2 - 4*a^2*c)*d^3*log(f)^3)
```

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

$$\int \frac{x^2}{a + bf^c f^{dx} + cf^{2c} f^{2dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(a+b*f**(d*x+c)+c*f**(2*d*x+2*c)),x)

[Out] Integral(x**2/(a + b*f**c*f**(d*x) + c*f**(2*c)*f**(2*d*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{cf^{2\,dx+2\,c} + bf^{dx+c} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a),x, algorithm="giac")
```

```
[Out] integrate(x^2/(c*f^(2*d*x + 2*c) + b*f^(d*x + c) + a), x)
```

3.527 $\int \frac{d+ef^{g+hx}}{a+bf^{g+hx}+cf^{2g+2hx}}\,dx$

Optimal. Leaf size=103

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{b^2-4ac}}\right)}{ah\log(f)\sqrt{b^2-4ac}}-\frac{d\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}+\frac{dx}{a}$$

```
[Out] (d*x)/a + ((b*d - 2*a*e)*ArcTanh[(b + 2*c*f^(g + h*x))/Sqrt[b^2 -
 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]*h*Log[f]) - (d*Log[a + b*f^(g + h*
x) + c*f^(2*g + 2*h*x)])/(2*a*h*Log[f])
```

Rubi [A] time = 0.284644, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.162

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{b^2-4ac}}\right)}{ah\log(f)\sqrt{b^2-4ac}}-\frac{d\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}+\frac{dx}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(d + e*f^(g + h*x))/(a + b*f^(g + h*x) + c*f^(2*g + 2*h*x)),x]
```

```
[Out] (d*x)/a + ((b*d - 2*a*e)*ArcTanh[(b + 2*c*f^(g + h*x))/Sqrt[b^2 -
 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]*h*Log[f]) - (d*Log[a + b*f^(g + h*
x) + c*f^(2*g + 2*h*x)])/(2*a*h*Log[f])
```

Rubi in Sympy [A] time = 57.1948, size = 148, normalized size = 1.44

$$\frac{df^{-g-hx}f^{g+hx}\log\left(f^{g+hx}\right)}{ah\log(f)}-\frac{df^{-g-hx}f^{g+hx}\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}-\frac{f^{-g-hx}f^{g+hx}(2ae-bd)\operatorname{atanh}\left(\frac{b+2cf^{g+hx}}{\sqrt{-4ac+b^2}}\right)}{ah\sqrt{-4ac+b^2}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d+e*f**(h*x+g))/(a+b*f**(h*x+g)+c*f**(2*h*x+2*g)),x)
```

```
[Out] d*f**(-g - h*x)*f**(g + h*x)*log(f**(g + h*x))/(a*h*log(f)) - d*f
**(-g - h*x)*f**(g + h*x)*log(a + b*f**(g + h*x) + c*f**(2*g + 2*
h*x))/(2*a*h*log(f)) - f**(-g - h*x)*f**(g + h*x)*(2*a*e - b*d)*a
tanh((b + 2*c*f**(g + h*x))/sqrt(-4*a*c + b**2))/(a*h*sqrt(-4*a*c
 + b**2)*log(f))
```

Mathematica [A] time = 0.282915, size = 102, normalized size = 0.99

$$-\frac{\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{4ac-b^2}}\right)}{h\log(f)\sqrt{4ac-b^2}}+\frac{d\log\left(a+f^{g+hx}\left(b+cf^{g+hx}\right)\right)}{h\log(f)}-2dx}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d + e*f^(g + h*x))/(a + b*f^(g + h*x) + c*f^(2*g + 2*h*x)),x]
```

```
[Out] -(-2*d*x + (2*(b*d - 2*a*e)*ArcTan[(b + 2*c*f^(g + h*x))/Sqrt[-b^
2 + 4*a*c]])/(Sqrt[-b^2 + 4*a*c]*h*Log[f]) + (d*Log[a + f^(g + h*
x)*(b + c*f^(g + h*x))])/(h*Log[f]))/(2*a)
```

Maple [B] time = 0.215, size = 993, normalized size = 9.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d+e*f^(h*x+g))/(a+b*f^(h*x+g)+c*f^(2*h*x+2*g)),x)
```

```
[Out] 4/(4*ln(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*a*c*d*h^2*x-1/(
4*ln(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*b^2*d*h^2*x+4/(4*l
n(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*a*c*d*g*h-1/(4*ln(f)^
2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*b^2*d*g*h-2/(4*a*c-b^2)/h/
ln(f)*ln(f^(h*x+g)+1/2*(2*a*b*e-b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^
2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a
*e-b*d))*c*d+1/2/a/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g)+1/2*(2*a*b*e-
b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a
*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a*e-b*d))*b^2*d+1/2/a/(4*a*c-b^2)
/h/ln(f)*ln(f^(h*x+g)+1/2*(2*a*b*e-b^2*d+(-16*a^3*c*e^2+4*a^2*b^2
*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(
2*a*e-b*d))*(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d
*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2)-2/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g
)-1/2*(-2*a*b*e+b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e
-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a*e-b*d))*c*d+1/2
/a/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g)-1/2*(-2*a*b*e+b^2*d+(-16*a^3*
c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*
d^2)^(1/2))/c/(2*a*e-b*d))*b^2*d-1/2/a/(4*a*c-b^2)/h/ln(f)*ln(f^(
h*x+g)-1/2*(-2*a*b*e+b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*
c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a*e-b*d))*(-
16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d
^2+b^4*d^2)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.420407, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{b^2-4\,ac}dhx\log(f)-\sqrt{b^2-4\,ac}d\log\left(cf^{2\,hx+2\,g}+bf^{hx+g}+a\right)-(bd-2\,ae)\log\left(\frac{2\sqrt{b^2-4\,ac}c^2f^{2\,hx+2\,g}-b^3+4\,abc-2\left(b^2c-4\,c\right.}{cf^{2\,hx+2\,g}}\right.}{2\sqrt{b^2-4\,ac}ah\log(f)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm
```

```
[Out] [1/2*(2*sqrt(b^2 - 4*a*c)*d*h*x*log(f) - sqrt(b^2 - 4*a*c)*d*log(
c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a) - (b*d - 2*a*e)*log((2*sqr
t(b^2 - 4*a*c)*c^2*f^(2*h*x + 2*g) - b^3 + 4*a*b*c - 2*(b^2*c - 4
*a*c^2 - sqrt(b^2 - 4*a*c)*b*c)*f^(h*x + g) + (b^2 - 2*a*c)*sqrt(
b^2 - 4*a*c))/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a)))/(sqrt(b^2
 - 4*a*c)*a*h*log(f)), 1/2*(2*sqrt(-b^2 + 4*a*c)*d*h*x*log(f) - s
qrt(-b^2 + 4*a*c)*d*log(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a) -
2*(b*d - 2*a*e)*arctan(-(2*sqrt(-b^2 + 4*a*c)*c*f^(h*x + g) + sqr
t(-b^2 + 4*a*c)*b)/(b^2 - 4*a*c)))/(sqrt(-b^2 + 4*a*c)*a*h*log(f)
)]
```

Sympy [A] time = 1.30853, size = 148, normalized size = 1.44

$$\operatorname{RootSum}\left(z^2\left(4a^2ch^2\log(f)^2 - ab^2h^2\log(f)^2\right) + z\left(4acdh\log(f) - b^2dh\log(f)\right) + ae^2 - bde + cd^2, \left(i \mapsto i\log\left(e^{\frac{(2g+2hx)\log}{2}}\right.\right.\right.$$
$$+ \frac{dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d+e*f**(h*x+g))/(a+b*f**(h*x+g)+c*f**(2*h*x+2*g)),x)
```

```
[Out] RootSum(_z**2*(4*a**2*c*h**2*log(f)**2 - a*b**2*h**2*log(f)**2) +
 _z*(4*a*c*d*h*log(f) - b**2*d*h*log(f)) + a*e**2 - b*d*e + c*d**
2, Lambda(_i, _i*log(exp((2*g + 2*h*x)*log(f)/2) + (4*_i*a**2*c*h
*log(f) - _i*a*b**2*h*log(f) + a*b*e + 2*a*c*d - b**2*d)/(2*a*c*e
 - b*c*d)))) + d*x/a
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{ef^{hx+g} + d}{cf^{2\,hx+2\,g} + bf^{hx+g} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm
```

```
[Out] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g)
+ a), x)
```

3.528 $\int \frac{d+ef^{g+hx}}{a+bf^{g+hx}+cf^{2(g+hx)}}\,dx$

Optimal. Leaf size=103

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{b^2-4ac}}\right)}{ah\log(f)\sqrt{b^2-4ac}}-\frac{d\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}+\frac{dx}{a}$$

```
[Out] (d*x)/a + ((b*d - 2*a*e)*ArcTanh[(b + 2*c*f^(g + h*x))/Sqrt[b^2 -
 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]*h*Log[f]) - (d*Log[a + b*f^(g + h*
x) + c*f^(2*g + 2*h*x)])/(2*a*h*Log[f])
```

Rubi [A] time = 0.26173, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{b^2-4ac}}\right)}{ah\log(f)\sqrt{b^2-4ac}}-\frac{d\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log(f)}+\frac{dx}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(d + e*f^(g + h*x))/(a + b*f^(g + h*x) + c*f^(2*(g + h*x))),x]
```

```
[Out] (d*x)/a + ((b*d - 2*a*e)*ArcTanh[(b + 2*c*f^(g + h*x))/Sqrt[b^2 -
 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]*h*Log[f]) - (d*Log[a + b*f^(g + h*
x) + c*f^(2*g + 2*h*x)])/(2*a*h*Log[f])
```

Rubi in Sympy [A] time = 57.2282, size = 148, normalized size = 1.44

$$\frac{df^{-g-hx}f^{g+hx}\log\left(f^{g+hx}\right)}{ah\log\left(f\right)}-\frac{df^{-g-hx}f^{g+hx}\log\left(a+bf^{g+hx}+cf^{2g+2hx}\right)}{2ah\log\left(f\right)}-\frac{f^{-g-hx}f^{g+hx}\left(2ae-bd\right)\operatorname{atanh}\left(\frac{b+2cf^{g+hx}}{\sqrt{-4ac+b^2}}\right)}{ah\sqrt{-4ac+b^2}\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d+e*f**(h*x+g))/(a+b*f**(h*x+g)+c*f**(2*h*x+2*g)),x)
```

```
[Out] d*f**(-g - h*x)*f**(g + h*x)*log(f**(g + h*x))/(a*h*log(f)) - d*f
**(-g - h*x)*f**(g + h*x)*log(a + b*f**(g + h*x) + c*f**(2*g + 2*
h*x))/(2*a*h*log(f)) - f**(-g - h*x)*f**(g + h*x)*(2*a*e - b*d)*a
tanh((b + 2*c*f**(g + h*x))/sqrt(-4*a*c + b**2))/(a*h*sqrt(-4*a*c
 + b**2)*log(f))
```

Mathematica [A] time = 0.034115, size = 102, normalized size = 0.99

$$-\frac{\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2cf^{g+hx}}{\sqrt{4ac-b^2}}\right)}{h\log(f)\sqrt{4ac-b^2}}+\frac{d\log\left(a+f^{g+hx}\left(b+cf^{g+hx}\right)\right)}{h\log(f)}-2dx}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d + e*f^(g + h*x))/(a + b*f^(g + h*x) + c*f^(2*(g + h*x))),x]
```

```
[Out] -(-2*d*x + (2*(b*d - 2*a*e)*ArcTan[(b + 2*c*f^(g + h*x))/Sqrt[-b^
2 + 4*a*c]])/(Sqrt[-b^2 + 4*a*c]*h*Log[f]) + (d*Log[a + f^(g + h*
x)*(b + c*f^(g + h*x))])/(h*Log[f]))/(2*a)
```

Maple [B] time = 0., size = 993, normalized size = 9.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d+e*f^(h*x+g))/(a+b*f^(h*x+g)+c*f^(2*h*x+2*g)),x)
```

```
[Out] 4/(4*ln(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*a*c*d*h^2*x-1/(
4*ln(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*b^2*d*h^2*x+4/(4*l
n(f)^2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*a*c*d*g*h-1/(4*ln(f)^
2*a^2*c*h^2-ln(f)^2*a*b^2*h^2)*ln(f)^2*b^2*d*g*h-2/(4*a*c-b^2)/h/
ln(f)*ln(f^(h*x+g)+1/2*(2*a*b*e-b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^
2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a
*e-b*d))*c*d+1/2/a/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g)+1/2*(2*a*b*e-
b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a
*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a*e-b*d))*b^2*d+1/2/a/(4*a*c-b^2)
/h/ln(f)*ln(f^(h*x+g)+1/2*(2*a*b*e-b^2*d+(-16*a^3*c*e^2+4*a^2*b^2
*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(
2*a*e-b*d))*(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d
*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2)-2/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g
)-1/2*(-2*a*b*e+b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e
-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a*e-b*d))*c*d+1/2
/a/(4*a*c-b^2)/h/ln(f)*ln(f^(h*x+g)-1/2*(-2*a*b*e+b^2*d+(-16*a^3*
c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*
d^2)^(1/2))/c/(2*a*e-b*d))*b^2*d-1/2/a/(4*a*c-b^2)/h/ln(f)*ln(f^(
h*x+g)-1/2*(-2*a*b*e+b^2*d+(-16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*
c*d*e-4*a*b^3*d*e-4*a*b^2*c*d^2+b^4*d^2)^(1/2))/c/(2*a*e-b*d))*(-
16*a^3*c*e^2+4*a^2*b^2*e^2+16*a^2*b*c*d*e-4*a*b^3*d*e-4*a*b^2*c*d
^2+b^4*d^2)^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.393964, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{b^2-4\,ac}dhx\log(f)-\sqrt{b^2-4\,ac}d\log\left(cf^{2\,hx+2\,g}+bf^{hx+g}+a\right)-(bd-2\,ae)\log\left(\frac{2\sqrt{b^2-4\,ac}c^2f^{2\,hx+2\,g}-b^3+4\,abc-2\left(b^2c-4\,a\right.}{cf^{2\,hx+2\,g}}\right.}{2\sqrt{b^2-4\,ac}ah\log(f)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm
```

```
[Out] [1/2*(2*sqrt(b^2 - 4*a*c)*d*h*x*log(f) - sqrt(b^2 - 4*a*c)*d*log(
c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a) - (b*d - 2*a*e)*log((2*sqr
t(b^2 - 4*a*c)*c^2*f^(2*h*x + 2*g) - b^3 + 4*a*b*c - 2*(b^2*c - 4
*a*c^2 - sqrt(b^2 - 4*a*c)*b*c)*f^(h*x + g) + (b^2 - 2*a*c)*sqrt(
b^2 - 4*a*c))/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a)))/(sqrt(b^2
 - 4*a*c)*a*h*log(f)), 1/2*(2*sqrt(-b^2 + 4*a*c)*d*h*x*log(f) - s
qrt(-b^2 + 4*a*c)*d*log(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a) -
2*(b*d - 2*a*e)*arctan(-(2*sqrt(-b^2 + 4*a*c)*c*f^(h*x + g) + sqr
t(-b^2 + 4*a*c)*b)/(b^2 - 4*a*c)))/(sqrt(-b^2 + 4*a*c)*a*h*log(f)
)]
```

Sympy [A] time = 1.33486, size = 148, normalized size = 1.44

$$\operatorname{RootSum}\left(z^2\left(4a^2ch^2\log(f)^2 - ab^2h^2\log(f)^2\right) + z\left(4acdh\log(f) - b^2dh\log(f)\right) + ae^2 - bde + cd^2, \left(i \mapsto i\log\left(e^{\frac{(2g+2hx)\log}{2}}\right.\right.\right.$$
$$+ \frac{dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d+e*f**(h*x+g))/(a+b*f**(h*x+g)+c*f**(2*h*x+2*g)),x)
```

```
[Out] RootSum(_z**2*(4*a**2*c*h**2*log(f)**2 - a*b**2*h**2*log(f)**2) +
 _z*(4*a*c*d*h*log(f) - b**2*d*h*log(f)) + a*e**2 - b*d*e + c*d**
2, Lambda(_i, _i*log(exp((2*g + 2*h*x)*log(f)/2) + (4*_i*a**2*c*h
*log(f) - _i*a*b**2*h*log(f) + a*b*e + 2*a*c*d - b**2*d)/(2*a*c*e
 - b*c*d)))) + d*x/a
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{ef^{hx+g} + d}{cf^{2\,hx+2\,g} + bf^{hx+g} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g) + a),x, algorithm
```

```
[Out] integrate((e*f^(h*x + g) + d)/(c*f^(2*h*x + 2*g) + b*f^(h*x + g)
+ a), x)
```

3.529 $\int \frac{1}{2+e^{-x}+e^x}\,dx$

Optimal. Leaf size=9

$$-\frac{1}{e^x+1}$$

```
[Out] -(1 + E^x)^(-1)
```

Rubi [A] time = 0.0183408, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{1}{e^x+1}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + E^(-x) + E^x)^(-1),x]

[Out] -(1 + E^x)^(-1)
```

Rubi in Sympy [A] time = 4.21824, size = 20, normalized size = 2.22

$$-\frac{2e^x+2}{2\left(e^{2x}+2e^x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(2+exp(-x)+exp(x)),x)

[Out] -(2*exp(x) + 2)/(2*(exp(2*x) + 2*exp(x) + 1))
```

Mathematica [A] time = 0.00508773, size = 9, normalized size = 1.

$$-\frac{1}{e^x+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + E^(-x) + E^x)^(-1),x]

[Out] -(1 + E^x)^(-1)
```

Maple [A] time = 0.007, size = 9, normalized size = 1.

$$-\left(1+e^x\right)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(2+exp(-x)+exp(x)),x)

[Out] -1/(1+exp(x))
```

Maxima [A] time = 0.816084, size = 11, normalized size = 1.22

$$\frac{1}{e^{(-x)} + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(-x) + e^x + 2),x, algorithm="maxima")

[Out] 1/(e^(-x) + 1)
```

Fricas [A] time = 0.230382, size = 11, normalized size = 1.22

$$-\frac{1}{e^{x} + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(-x) + e^x + 2),x, algorithm="fricas")

[Out] -1/(e^x + 1)
```

Sympy [A] time = 0.050816, size = 7, normalized size = 0.78

$$-\frac{1}{e^{x} + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2+exp(-x)+exp(x)),x)

[Out] -1/(exp(x) + 1)
```

GIAC/XCAS [A] time = 0.235265, size = 11, normalized size = 1.22

$$-\frac{1}{e^{x} + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(-x) + e^x + 2),x, algorithm="giac")

[Out] -1/(e^x + 1)
```

3.530 $\int \frac{x}{2+e^{-x}+e^x} \, dx$

Optimal. Leaf size=20

$$-\frac{x}{e^x+1}+x-\log \left(e^x+1\right)$$

```
[Out] x - x/(1 + E^x) - Log[1 + E^x]
```

Rubi [A] time = 0.204094, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.5

$$-\frac{x}{e^x+1}+x-\log \left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x/(2 + E^(-x) + E^x),x]

[Out] x - x/(1 + E^x) - Log[1 + E^x]
```

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

$$\int \frac{xe^x}{e^{2x}+2e^x+1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(2+exp(-x)+exp(x)),x)

[Out] Integral(x*exp(x)/(exp(2*x) + 2*exp(x) + 1), x)
```

Mathematica [A] time = 0.0184128, size = 20, normalized size = 1.

$$-\frac{x}{e^x+1}+x-\log \left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(2 + E^(-x) + E^x),x]

[Out] x - x/(1 + E^x) - Log[1 + E^x]
```

Maple [A] time = 0.012, size = 19, normalized size = 1.

$$-\ln \left(1+e^x\right)+\frac{xe^x}{1+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(2+exp(-x)+exp(x)),x)

[Out] -ln(1+exp(x))+x*exp(x)/(1+exp(x))
```

Maxima [A] time = 0.759634, size = 24, normalized size = 1.2

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(-x) + e^x + 2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.245383, size = 31, normalized size = 1.55

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(-x) + e^x + 2),x, algorithm="fricas")
```

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

Sympy [A] time = 0.076257, size = 14, normalized size = 0.7

$$x - \frac{x}{e^x+1} - \log\left(e^x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(2+exp(-x)+exp(x)),x)
```

```
[Out] x - x/(exp(x) + 1) - log(exp(x) + 1)
```

GIAC/XCAS [A] time = 0.246447, size = 38, normalized size = 1.9

$$\frac{xe^x - e^x\ln\left(e^x+1\right) - \ln\left(e^x+1\right)}{e^x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(e^(-x) + e^x + 2),x, algorithm="giac")
```

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

3.531 $\int \frac{x^2}{2+e^{-x}+e^x} \, dx$

Optimal. Leaf size=34

$$-2\text{PolyLog}(2,-e^x)-\frac{x^2}{e^x+1}+x^2-2x\log(e^x+1)$$

```
[Out] x^2 - x^2/(1 + E^x) - 2*x*Log[1 + E^x] - 2*PolyLog[2, -E^x]
```

Rubi [A] time = 0.37813, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$

$$-2\text{PolyLog}(2,-e^x)-\frac{x^2}{e^x+1}+x^2-2x\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(2 + E^(-x) + E^x),x]

[Out] x^2 - x^2/(1 + E^x) - 2*x*Log[1 + E^x] - 2*PolyLog[2, -E^x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(2+exp(-x)+exp(x)),x)

[Out] Timed out
```

Mathematica [A] time = 0.0565122, size = 33, normalized size = 0.97

$$x\left(\frac{e^x x}{e^x+1}-2\log(e^x+1)\right)-2\text{PolyLog}(2,-e^x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(2 + E^(-x) + E^x),x]

[Out] x*((E^x*x)/(1 + E^x) - 2*Log[1 + E^x]) - 2*PolyLog[2, -E^x]
```

Maple [A] time = 0.031, size = 32, normalized size = 0.9

$$x^2-\frac{x^2}{1+e^x}-2x\ln(1+e^x)-2\,polylog(2,-e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(2+exp(-x)+exp(x)),x)
```

```
[Out] x^2-x^2/(1+exp(x))-2*x*ln(1+exp(x))-2*polylog(2,-exp(x))
```

Maxima [A] time = 0.81497, size = 41, normalized size = 1.21

$$x^2 - 2x\log\left(e^x + 1\right) - \frac{x^2}{e^x + 1} - 2\,\mathrm{Li}_2\left(-e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(-x) + e^x + 2),x, algorithm="maxima")
```

```
[Out] x^2 - 2*x*log(e^x + 1) - x^2/(e^x + 1) - 2*dilog(-e^x)
```

Fricas [A] time = 0.257606, size = 51, normalized size = 1.5

$$\frac{x^2e^x - 2\left(e^x + 1\right)\mathrm{Li}_2\left(-e^x\right) - 2\left(xe^x + x\right)\log\left(e^x + 1\right)}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(-x) + e^x + 2),x, algorithm="fricas")
```

```
[Out] (x^2*e^x - 2*(e^x + 1)*dilog(-e^x) - 2*(x*e^x + x)*log(e^x + 1))/
(e^x + 1)
```

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

$$-\frac{x^2}{e^x + 1} + 2\int\frac{x}{e^x + 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(2+exp(-x)+exp(x)),x)
```

```
[Out] -x**2/(exp(x) + 1) + 2*Integral(x/(exp(x) + 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^2}{e^{(-x)} + e^x + 2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(e^(-x) + e^x + 2),x, algorithm="giac")
```

```
[Out] integrate(x^2/(e^(-x) + e^x + 2), x)
```

3.532 $\int \frac{1}{2+f^{-c-dx}+f^{c+dx}}\,dx$

Optimal. Leaf size=20

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

```
[Out] -(1/(d*(1 + f^(c + d*x))*Log[f]))
```

Rubi [A] time = 0.0342183, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

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

Antiderivative was successfully verified.

```
[In] Int[(2 + f^(-c - d*x) + f^(c + d*x))^(-1),x]
```

```
[Out] -(1/(d*(1 + f^(c + d*x))*Log[f]))
```

Rubi in Sympy [A] time = 7.26354, size = 53, normalized size = 2.65

$$-\frac{f^{-c-dx}f^{c+dx}\left(2f^{c+dx}+2\right)}{2d\left(2f^{c+dx}+f^{2c+2dx}+1\right)\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(2+f**(-d*x-c)+f**(d*x+c)),x)
```

```
[Out] -f**(-c - d*x)*f**(c + d*x)*(2*f**(c + d*x) + 2)/(2*d*(2*f**(c + d*x) + f**(2*c + 2*d*x) + 1)*log(f))
```

Mathematica [A] time = 0.0175402, size = 20, normalized size = 1.

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

Antiderivative was successfully verified.

```
[In] Integrate[(2 + f^(-c - d*x) + f^(c + d*x))^(-1),x]
```

```
[Out] -(1/(d*(1 + f^(c + d*x))*Log[f]))
```

Maple [A] time = 0.021, size = 25, normalized size = 1.3

$$\frac{1}{d\ln\left(f\right)\left(e^{(-dx-c)\ln(f)}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(2+f^(-d*x-c)+f^(d*x+c)),x)

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

Maxima [A] time = 0.783326, size = 30, normalized size = 1.5

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="maxima")

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

Fricas [A] time = 0.262904, size = 27, normalized size = 1.35

$$-\frac{1}{df^{dx+c}\log\left(f\right)+d\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="fricas")

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

Sympy [A] time = 0.098957, size = 19, normalized size = 0.95

$$-\frac{1}{df^{c+dx}\log\left(f\right)+d\log\left(f\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2+f**(-d*x-c)+f**(d*x+c)),x)

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

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{f^{dx+c}+f^{-dx-c}+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="giac")

[Out] integrate(1/(f^(d*x + c) + f^(-d*x - c) + 2), x)
```

3.533 $\int \frac{x}{2+f^{-c-dx}+f^{c+dx}}\,dx$

Optimal. Leaf size=50

$$-\frac{\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x}{d\log(f)\left(f^{c+dx}+1\right)}+\frac{x}{d\log(f)}$$

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

Rubi [A] time = 0.437398, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.304

$$-\frac{\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x}{d\log(f)\left(f^{c+dx}+1\right)}+\frac{x}{d\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(2 + f^(-c - d*x) + f^(c + d*x)),x]
```

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

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(2+f**(-d*x-c)+f**(d*x+c)),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.0535184, size = 44, normalized size = 0.88

$$\frac{\frac{dx\log(f)f^{c+dx}}{f^{c+dx}+1}-\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(2 + f^(-c - d*x) + f^(c + d*x)),x]
```

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

Maple [A] time = 0.023, size = 64, normalized size = 1.3

$$-\frac{x e^{(-dx-c)\ln(f)}}{d\ln(f)\left(e^{(-dx-c)\ln(f)}+1\right)}-\frac{\ln\left(e^{(-dx-c)\ln(f)}+1\right)}{(\ln(f))^2 d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(2+f^(-d*x-c)+f^(d*x+c)),x)
```

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

Maxima [A] time = 0.795164, size = 77, normalized size = 1.54

$$\frac{f^{dx}f^{c}x}{df^{dx}f^{c}\log(f)+d\log(f)}-\frac{\log\left(\frac{f^{dx}f^{c}+1}{f^{c}}\right)}{d^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.254853, size = 82, normalized size = 1.64

$$\frac{df^{dx+c}x\log(f)-\left(f^{dx+c}+1\right)\log\left(f^{dx+c}+1\right)}{d^2f^{dx+c}\log(f)^2+d^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="fricas")
```

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

Sympy [A] time = 0.152856, size = 42, normalized size = 0.84

$$-\frac{x}{df^{c+dx}\log(f)+d\log(f)}+\frac{x}{d\log(f)}-\frac{\log\left(f^{c+dx}+1\right)}{d^2\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(2+f**(-d*x-c)+f**(d*x+c)),x)
```

```
[Out] -x/(d*f**(c + d*x)*log(f) + d*log(f)) + x/(d*log(f)) - log(f**(c
+ d*x) + 1)/(d**2*log(f)**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{f^{dx+c}+f^{-dx-c}+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="giac")
```

```
[Out] integrate(x/(f^(d*x + c) + f^(-d*x - c) + 2), x)
```

3.534 $\int \frac{x^2}{2+f^{-c-dx}+f^{c+dx}}\,dx$

Optimal. Leaf size=75

$$-\frac{2\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^3\log^3(f)}-\frac{2x\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x^2}{d\log(f)\left(f^{c+dx}+1\right)}+\frac{x^2}{d\log(f)}$$

```
[Out] x^2/(d*Log[f]) - x^2/(d*(1 + f^(c + d*x))*Log[f]) - (2*x*Log[1 +
f^(c + d*x)])/(d^2*Log[f]^2) - (2*PolyLog[2, -f^(c + d*x)])/(d^3*
Log[f]^3)
```

Rubi [A] time = 0.754997, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.28

$$-\frac{2\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^3\log^3(f)}-\frac{2x\log\left(f^{c+dx}+1\right)}{d^2\log^2(f)}-\frac{x^2}{d\log(f)\left(f^{c+dx}+1\right)}+\frac{x^2}{d\log(f)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(2 + f^(-c - d*x) + f^(c + d*x)),x]
```

```
[Out] x^2/(d*Log[f]) - x^2/(d*(1 + f^(c + d*x))*Log[f]) - (2*x*Log[1 +
f^(c + d*x)])/(d^2*Log[f]^2) - (2*PolyLog[2, -f^(c + d*x)])/(d^3*
Log[f]^3)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(2+f**(-d*x-c)+f**(d*x+c)),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.146475, size = 63, normalized size = 0.84

$$\frac{dx\log(f)\left(\frac{dx\log(f)f^{c+dx}}{f^{c+dx}+1}-2\log\left(f^{c+dx}+1\right)\right)-2\text{PolyLog}\left(2,-f^{c+dx}\right)}{d^3\log^3(f)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(2 + f^(-c - d*x) + f^(c + d*x)),x]
```

```
[Out] (d*x*Log[f]*((d*f^(c + d*x)*x*Log[f])/(1 + f^(c + d*x)) - 2*Log[1
 + f^(c + d*x)]) - 2*PolyLog[2, -f^(c + d*x)])/(d^3*Log[f]^3)
```

Maple [A] time = 0.043, size = 129, normalized size = 1.7

$$\frac{x^2}{d\ln(f)\left(f^{-dx-c}+1\right)}-\frac{x^2}{d\ln(f)}-2\,\frac{cx}{d^2\ln(f)}-\frac{c^2}{d^3\ln(f)}$$
$$-2\,\frac{\ln\left(f^{-dx-c}+1\right)x}{(\ln(f))^2d^2}+2\,\frac{polylog\left(2,-f^{-dx-c}\right)}{d^3(\ln(f))^3}-2\,\frac{c\ln\left(f^{-dx-c}\right)}{d^3(\ln(f))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^2/(2+f^(-d*x-c)+f^(d*x+c)),x)
```

```
[Out] 1/ln(f)/d*x^2/(f^(-d*x-c)+1)-x^2/d/ln(f)-2/d^2/ln(f)*c*x-1/d^3/ln
(f)*c^2-2/d^2/ln(f)^2*ln(f^(-d*x-c)+1)*x+2/d^3/ln(f)^3*polylog(2,
-f^(-d*x-c))-2/d^3/ln(f)^2*c*ln(f^(-d*x-c))
```

Maxima [A] time = 0.888333, size = 109, normalized size = 1.45

$$-\frac{x^2}{df^{dx}f^c\log(f)+d\log(f)}+\frac{\log\left(f^{dx}\right)^2}{d^3\log(f)^3}-\frac{2\left(\log\left(f^{dx}f^c+1\right)\log\left(f^{dx}\right)+\mathrm{Li}_2\left(-f^{dx}f^c\right)\right)}{d^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="maxima")
```

```
[Out] -x^2/(d*f^(d*x)*f^c*log(f) + d*log(f)) + log(f^(d*x))^2/(d^3*log(
f)^3) - 2*(log(f^(d*x)*f^c + 1)*log(f^(d*x)) + dilog(-f^(d*x)*f^c
))/(d^3*log(f)^3)
```

Fricas [A] time = 0.253836, size = 154, normalized size = 2.05

$$-\frac{c^2\log(f)^2-\left(d^2x^2-c^2\right)f^{dx+c}\log(f)^2+2\left(f^{dx+c}+1\right)\mathrm{Li}_2\left(-f^{dx+c}\right)+2\left(df^{dx+c}x\log(f)+dx\log(f)\right)\log\left(f^{dx+c}+1\right)}{d^3f^{dx+c}\log(f)^3+d^3\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="fricas")
```

```
[Out] -(c^2*log(f)^2 - (d^2*x^2 - c^2)*f^(d*x + c)*log(f)^2 + 2*(f^(d*x
 + c) + 1)*dilog(-f^(d*x + c)) + 2*(d*f^(d*x + c)*x*log(f) + d*x*
log(f))*log(f^(d*x + c) + 1))/(d^3*f^(d*x + c)*log(f)^3 + d^3*log
(f)^3)
```

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

$$-\frac{x^2}{df^{c+dx}\log(f)+d\log(f)}+\frac{2\int\frac{x}{e^{c\log(f)}e^{dx\log(f)}+1}\,dx}{d\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(x**2/(2+f**(-d*x-c)+f**(d*x+c)),x)
```

```
[Out] -x**2/(d*f**(c + d*x)*log(f) + d*log(f)) + 2*Integral(x/(exp(c*lo
g(f))*exp(d*x*log(f)) + 1), x)/(d*log(f))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^2}{f^{dx+c}+f^{-dx-c}+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(f^(d*x + c) + f^(-d*x - c) + 2),x, algorithm="giac")

[Out] integrate(x^2/(f^(d*x + c) + f^(-d*x - c) + 2), x)
```

3.535 $\int \frac{1}{2+3^{-x}+3^x}\,dx$

Optimal. Leaf size=13

$$-\frac{1}{(3^x+1)\log(3)}$$

```
[Out] -(1/((1 + 3^x)*Log[3]))
```

Rubi [A] time = 0.0208296, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{1}{(3^x+1)\log(3)}$$

Antiderivative was successfully verified.

```
[In] Int[(2 + 3^(-x) + 3^x)^(-1),x]

[Out] -(1/((1 + 3^x)*Log[3]))
```

Rubi in Sympy [A] time = 4.34919, size = 24, normalized size = 1.85

$$-\frac{2\cdot 3^x+2}{2\left(3^{2x}+2\cdot 3^x+1\right)\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(2+1/(3**x)+3**x),x)

[Out] -(2*3**x + 2)/(2*(3**(2*x) + 2*3**x + 1)*log(3))
```

Mathematica [A] time = 0.00882577, size = 13, normalized size = 1.

$$-\frac{1}{(3^x+1)\log(3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 + 3^(-x) + 3^x)^(-1),x]

[Out] -(1/((1 + 3^x)*Log[3]))
```

Maple [A] time = 0.006, size = 14, normalized size = 1.1

$$-\frac{1}{(1+3^x)\ln(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(2+1/(3^x)+3^x),x)
```

```
[Out] -1/(1+3^x)/ln(3)
```

Maxima [A] time = 0.815408, size = 19, normalized size = 1.46

$$\frac{1}{\left(\frac{1}{3^x}+1\right)\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3^x + 1/3^x + 2),x, algorithm="maxima")
```

```
[Out] 1/((1/3^x + 1)*log(3))
```

Fricas [A] time = 0.245178, size = 18, normalized size = 1.38

$$-\frac{1}{3^x\log(3)+\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3^x + 1/3^x + 2),x, algorithm="fricas")
```

```
[Out] -1/(3^x*log(3) + log(3))
```

Sympy [A] time = 0.075474, size = 10, normalized size = 0.77

$$\frac{1}{\log(3)+3^{-x}\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2+1/(3**x)+3**x),x)
```

```
[Out] 1/(log(3) + 3**(-x)*log(3))
```

GIAC/XCAS [A] time = 0.26422, size = 18, normalized size = 1.38

$$-\frac{1}{(3^x+1)\ln(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3^x + 1/3^x + 2),x, algorithm="giac")
```

```
[Out] -1/((3^x + 1)*ln(3))
```

3.536 $\int \frac{1}{1-e^{-x}+2e^x} dx$

Optimal. Leaf size=23

$$\frac{1}{3}\log(1-2e^x)-\frac{1}{3}\log(e^x+1)$$

```
[Out] Log[1 - 2*E^x]/3 - Log[1 + E^x]/3
```

Rubi [A] time = 0.0321129, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{1}{3}\log(1-2e^x)-\frac{1}{3}\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In] Int[(1 - E^(-x) + 2*E^x)^(-1),x]

[Out] Log[1 - 2*E^x]/3 - Log[1 + E^x]/3
```

Rubi in Sympy [A] time = 5.72335, size = 17, normalized size = 0.74

$$\frac{\log(-2e^x+1)}{3}-\frac{\log(e^x+1)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(1-1/exp(x)+2*exp(x)),x)

[Out] log(-2*exp(x) + 1)/3 - log(exp(x) + 1)/3
```

Mathematica [A] time = 0.0137855, size = 21, normalized size = 0.91

$$\frac{1}{3}(\log(1-2e^x)-\log(e^x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - E^(-x) + 2*E^x)^(-1),x]

[Out] (Log[1 - 2*E^x] - Log[1 + E^x])/3
```

Maple [A] time = 0.009, size = 18, normalized size = 0.8

$$-\frac{\ln(1+e^x)}{3}+\frac{\ln(2e^x-1)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(1-1/exp(x)+2*exp(x)),x)
```

```
[Out] -1/3*ln(1+exp(x))+1/3*ln(2*exp(x)-1)
```

Maxima [A] time = 0.785005, size = 26, normalized size = 1.13

$$-\frac{1}{3}\log\left(e^{(-x)}+1\right)+\frac{1}{3}\log\left(e^{(-x)}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^(-x) - 2*e^x - 1),x, algorithm="maxima")
```

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

Fricas [A] time = 0.2506, size = 23, normalized size = 1.

$$\frac{1}{3}\log\left(2e^{x}-1\right)-\frac{1}{3}\log\left(e^{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^(-x) - 2*e^x - 1),x, algorithm="fricas")
```

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

Sympy [A] time = 0.115609, size = 17, normalized size = 0.74

$$\frac{\log\left(e^{x}-\frac{1}{2}\right)}{3}-\frac{\log\left(e^{x}+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-1/exp(x)+2*exp(x)),x)
```

```
[Out] log(exp(x) - 1/2)/3 - log(exp(x) + 1)/3
```

GIAC/XCAS [A] time = 0.251525, size = 24, normalized size = 1.04

$$-\frac{1}{3}\ln\left(e^{x}+1\right)+\frac{1}{3}\ln\left(|2e^{x}-1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^(-x) - 2*e^x - 1),x, algorithm="giac")
```

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

3.537 $\int \frac{1}{a+be^{-x}+ce^x}\,dx$

Optimal. Leaf size=36

$$-\frac{2\tanh^{-1}\left(\frac{a+2ce^x}{\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}$$

```
[Out] (-2*ArcTanh[(a + 2*c*E^x)/Sqrt[a^2 - 4*b*c]])/Sqrt[a^2 - 4*b*c]
```

Rubi [A] time = 0.109068, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{2\tanh^{-1}\left(\frac{a+2ce^x}{\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b/E^x + c*E^x)^(-1),x]

[Out] (-2*ArcTanh[(a + 2*c*E^x)/Sqrt[a^2 - 4*b*c]])/Sqrt[a^2 - 4*b*c]
```

Rubi in Sympy [A] time = 9.86818, size = 36, normalized size = 1.

$$-\frac{2\operatorname{atanh}\left(\frac{a+2ce^x}{\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+b/exp(x)+c*exp(x)),x)

[Out] -2*atanh((a + 2*c*exp(x))/sqrt(a**2 - 4*b*c))/sqrt(a**2 - 4*b*c)
```

Mathematica [A] time = 0.0347236, size = 40, normalized size = 1.11

$$\frac{2\tan^{-1}\left(\frac{a+2ce^x}{\sqrt{4bc-a^2}}\right)}{\sqrt{4bc-a^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b/E^x + c*E^x)^(-1),x]

[Out] (2*ArcTan[(a + 2*c*E^x)/Sqrt[-a^2 + 4*b*c]])/Sqrt[-a^2 + 4*b*c]
```

Maple [A] time = 0.007, size = 36, normalized size = 1.

$$2\,\frac{1}{\sqrt{-a^2+4\,cb}}\arctan\left(\frac{a+2\,ce^x}{\sqrt{-a^2+4\,cb}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] 2/(-a^2+4*b*c)^(1/2)*arctan((a+2*c*exp(x))/(-a^2+4*b*c)^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*e^(-x) + c*e^x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.254213, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(-\frac{a^3-4\,abc+2\,\left(a^2c-4\,bc^2\right)e^x-\left(2\,c^2e^{(2\,x)}+2\,ace^x+a^2-2\,bc\right)\sqrt{a^2-4\,bc}}{ce^{(2\,x)}+ae^x+b}\right)}{\sqrt{a^2-4\,bc}}, \frac{2\,\arctan\left(-\frac{\sqrt{-a^2+4\,bc}(2\,ce^x+a)}{a^2-4\,bc}\right)}{\sqrt{-a^2+4\,bc}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*e^(-x) + c*e^x + a),x, algorithm="fricas")
```

```
[Out] [log(-(a^3 - 4*a*b*c + 2*(a^2*c - 4*b*c^2)*e^x - (2*c^2*e^(2*x) +
 2*a*c*e^x + a^2 - 2*b*c)*sqrt(a^2 - 4*b*c))/(c*e^(2*x) + a*e^x +
 b))/sqrt(a^2 - 4*b*c), 2*arctan(-sqrt(-a^2 + 4*b*c)*(2*c*e^x + a
)/(a^2 - 4*b*c))/sqrt(-a^2 + 4*b*c)]
```

Sympy [A] time = 0.317193, size = 36, normalized size = 1.

$$\operatorname{RootSum}\left(z^2\left(a^2-4bc\right)-1, \left(i\mapsto i\log\left(e^x+\frac{-ia^2+4ibc+a}{2c}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] RootSum(_z**2*(a**2 - 4*b*c) - 1, Lambda(_i, _i*log(exp(x) + (-_i
*a**2 + 4*_i*b*c + a)/(2*c))))
```

GIAC/XCAS [A] time = 0.230236, size = 47, normalized size = 1.31

$$\frac{2\,\arctan\left(\frac{2\,ce^x+a}{\sqrt{-a^2+4\,bc}}\right)}{\sqrt{-a^2+4\,bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*arctan((2*c*e^x + a)/sqrt(-a^2 + 4*b*c))/sqrt(-a^2 + 4*b*c)
```

3.538 $\int \frac{x}{a+be^{-x}+ce^{x}}\,dx$

Optimal. Leaf size=159

$$\frac{\text{PolyLog}\left(2,-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)}{\sqrt{a^2-4bc}}+\frac{x\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}-\frac{x\log\left(\frac{2ce^x}{\sqrt{a^2-4bc}+a}+1\right)}{\sqrt{a^2-4bc}}$$

```
[Out] (x*Log[1 + (2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c]
- (x*Log[1 + (2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c
] + PolyLog[2, (-2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])]/Sqrt[a^2 - 4*b
*c] - PolyLog[2, (-2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])]/Sqrt[a^2 - 4
*b*c]
```

Rubi [A] time = 0.484551, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278

$$\frac{\text{PolyLog}\left(2,-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)}{\sqrt{a^2-4bc}}+\frac{x\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}-\frac{x\log\left(\frac{2ce^x}{\sqrt{a^2-4bc}+a}+1\right)}{\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b/E^x + c*E^x),x]
```

```
[Out] (x*Log[1 + (2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c]
- (x*Log[1 + (2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c
] + PolyLog[2, (-2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])]/Sqrt[a^2 - 4*b
*c] - PolyLog[2, (-2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])]/Sqrt[a^2 - 4
*b*c]
```

Rubi in Sympy [A] time = 49.2083, size = 144, normalized size = 0.91

$$\frac{x\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}-\frac{x\log\left(\frac{2ce^x}{a+\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}+\frac{\text{Li}_2\left(-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{\text{Li}_2\left(-\frac{2ce^x}{a+\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] x*log(2*c*exp(x)/(a - sqrt(a**2 - 4*b*c)) + 1)/sqrt(a**2 - 4*b*c)
 - x*log(2*c*exp(x)/(a + sqrt(a**2 - 4*b*c)) + 1)/sqrt(a**2 - 4*b
*c) + polylog(2, -2*c*exp(x)/(a - sqrt(a**2 - 4*b*c)))/sqrt(a**2
- 4*b*c) - polylog(2, -2*c*exp(x)/(a + sqrt(a**2 - 4*b*c)))/sqrt(
a**2 - 4*b*c)
```

Mathematica [A] time = 0.14417, size = 123, normalized size = 0.77

$$\frac{\text{PolyLog}\left(2,\frac{2ce^x}{\sqrt{a^2-4bc}-a}\right)-\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)+x\left(\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)-\log\left(\frac{2ce^x}{\sqrt{a^2-4bc}+a}+1\right)\right)}{\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b/E^x + c*E^x),x]
```

```
[Out] (x*(Log[1 + (2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])] - Log[1 + (2*c*E^x
)/(a + Sqrt[a^2 - 4*b*c])]) + PolyLog[2, (2*c*E^x)/(-a + Sqrt[a^2
 - 4*b*c])] - PolyLog[2, (-2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])])/Sqr
t[a^2 - 4*b*c]
```

Maple [C] time = 0.017, size = 180, normalized size = 1.1

$$x\left(\ln\left(1\left(-2\,ce^{x}+\sqrt{a^{2}-4\,cb}-a\right)\left(-a+\sqrt{a^{2}-4\,cb}\right)^{-1}\right)-\ln\left(1\left(2\,ce^{x}+\sqrt{a^{2}-4\,cb}+a\right)\left(a+\sqrt{a^{2}-4\,cb}\right)^{-1}\right)\right)\frac{1}{\sqrt{a^{2}-4\,c}}$$
$$+1\,dilog\left(1\left(-2\,ce^{x}+\sqrt{a^{2}-4\,cb}-a\right)\left(-a+\sqrt{a^{2}-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^{2}-4\,cb}}$$
$$-1\,dilog\left(1\left(2\,ce^{x}+\sqrt{a^{2}-4\,cb}+a\right)\left(a+\sqrt{a^{2}-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^{2}-4\,cb}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] x*(ln((-2*c*exp(x)+(a^2-4*b*c)^(1/2)-a)/(-a+(a^2-4*b*c)^(1/2)))-l
n((2*c*exp(x)+(a^2-4*b*c)^(1/2)+a)/(a+(a^2-4*b*c)^(1/2))))/(a^2-4
*b*c)^(1/2)+1/(a^2-4*b*c)^(1/2)*dilog((-2*c*exp(x)+(a^2-4*b*c)^(1
/2)-a)/(-a+(a^2-4*b*c)^(1/2)))-1/(a^2-4*b*c)^(1/2)*dilog((2*c*exp
(x)+(a^2-4*b*c)^(1/2)+a)/(a+(a^2-4*b*c)^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*e^(-x) + c*e^x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.260567, size = 369, normalized size = 2.32

$$-\frac{bx\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}\log\left(\frac{2\,ce^{x}+b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}+a}{b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}+a}\right)-bx\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}\log\left(-\frac{2\,ce^{x}-b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}+a}{b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}-a}\right)+b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}{\rm Li}_2\left(-\frac{2\,ce^{x}+b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}+a}{b\sqrt{\frac{a^{2}-4\,bc}{b^{2}}}+a}+1\right)-b\sqrt{}}{a^{2}-4\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*e^(-x) + c*e^x + a),x, algorithm="fricas")
```

```
[Out] -(b*x*sqrt((a^2 - 4*b*c)/b^2)*log((2*c*e^x + b*sqrt((a^2 - 4*b*c)
/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) + a)) - b*x*sqrt((a^2 - 4*b
*c)/b^2)*log(-(2*c*e^x - b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sqrt((
a^2 - 4*b*c)/b^2) - a)) + b*sqrt((a^2 - 4*b*c)/b^2)*dilog(-(2*c*e
^x + b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) +
a) + 1) - b*sqrt((a^2 - 4*b*c)/b^2)*dilog((2*c*e^x - b*sqrt((a^2
- 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) - a) + 1))/(a^2 - 4
*b*c)
```

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

$$\int \frac{xe^x}{ae^x + b + ce^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(a+b/exp(x)+c*exp(x)),x)

[Out] Integral(x*exp(x)/(a*exp(x) + b + c*exp(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{be^{(-x)} + ce^x + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*e^(-x) + c*e^x + a),x, algorithm="giac")

[Out] integrate(x/(b*e^(-x) + c*e^x + a), x)
```

3.539 $\int \frac{x^2}{a+be^{-x}+ce^x}\,dx$

Optimal. Leaf size=244

$$\frac{2x\text{PolyLog}\left(2,-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{2x\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)}{\sqrt{a^2-4bc}}-\frac{2\text{PolyLog}\left(3,-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}+\frac{2\text{PolyLog}\left(3,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)}{\sqrt{a^2-4bc}}+\frac{x^2\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}-\frac{x^2\log\left(\frac{2ce^x}{\sqrt{a^2-4bc}+a}+1\right)}{\sqrt{a^2-4bc}}$$

```
[Out] (x^2*Log[1 + (2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c
] - (x^2*Log[1 + (2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4
*b*c] + (2*x*PolyLog[2, (-2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])])/Sqrt
[a^2 - 4*b*c] - (2*x*PolyLog[2, (-2*c*E^x)/(a + Sqrt[a^2 - 4*b*c]
)])/Sqrt[a^2 - 4*b*c] - (2*PolyLog[3, (-2*c*E^x)/(a - Sqrt[a^2 -
4*b*c])])/Sqrt[a^2 - 4*b*c] + (2*PolyLog[3, (-2*c*E^x)/(a + Sqrt[
a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c]
```

Rubi [A] time = 0.797101, antiderivative size = 244, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3

$$\frac{2x\text{PolyLog}\left(2,-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{2x\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)}{\sqrt{a^2-4bc}}-\frac{2\text{PolyLog}\left(3,-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}+\frac{2\text{PolyLog}\left(3,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)}{\sqrt{a^2-4bc}}+\frac{x^2\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}-\frac{x^2\log\left(\frac{2ce^x}{\sqrt{a^2-4bc}+a}+1\right)}{\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b/E^x + c*E^x),x]
```

```
[Out] (x^2*Log[1 + (2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c
] - (x^2*Log[1 + (2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4
*b*c] + (2*x*PolyLog[2, (-2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])])/Sqrt
[a^2 - 4*b*c] - (2*x*PolyLog[2, (-2*c*E^x)/(a + Sqrt[a^2 - 4*b*c]
)])/Sqrt[a^2 - 4*b*c] - (2*PolyLog[3, (-2*c*E^x)/(a - Sqrt[a^2 -
4*b*c])])/Sqrt[a^2 - 4*b*c] + (2*PolyLog[3, (-2*c*E^x)/(a + Sqrt[
a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c]
```

Rubi in Sympy [A] time = 82.7921, size = 230, normalized size = 0.94

$$\frac{x^2\log\left(\frac{2ce^x}{a-\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}-\frac{x^2\log\left(\frac{2ce^x}{a+\sqrt{a^2-4bc}}+1\right)}{\sqrt{a^2-4bc}}+\frac{2x\operatorname{Li}_2\left(-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{2x\operatorname{Li}_2\left(-\frac{2ce^x}{a+\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}-\frac{2\operatorname{Li}_3\left(-\frac{2ce^x}{a-\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}+\frac{2\operatorname{Li}_3\left(-\frac{2ce^x}{a+\sqrt{a^2-4bc}}\right)}{\sqrt{a^2-4bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] x**2*log(2*c*exp(x)/(a - sqrt(a**2 - 4*b*c)) + 1)/sqrt(a**2 - 4*b
*c) - x**2*log(2*c*exp(x)/(a + sqrt(a**2 - 4*b*c)) + 1)/sqrt(a**2
 - 4*b*c) + 2*x*polylog(2, -2*c*exp(x)/(a - sqrt(a**2 - 4*b*c)))/
sqrt(a**2 - 4*b*c) - 2*x*polylog(2, -2*c*exp(x)/(a + sqrt(a**2 -
4*b*c)))/sqrt(a**2 - 4*b*c) - 2*polylog(3, -2*c*exp(x)/(a - sqrt(
a**2 - 4*b*c)))/sqrt(a**2 - 4*b*c) + 2*polylog(3, -2*c*exp(x)/(a
```

```
+ sqrt(a**2 - 4*b*c)))/sqrt(a**2 - 4*b*c)
```

Mathematica [A] time = 0.0755944, size = 185, normalized size = 0.76

$$\frac{2x\text{PolyLog}\left(2,\frac{2ce^x}{\sqrt{a^2-4bc}-a}\right)-2x\text{PolyLog}\left(2,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)-2\text{PolyLog}\left(3,\frac{2ce^x}{\sqrt{a^2-4bc}-a}\right)+2\text{PolyLog}\left(3,-\frac{2ce^x}{\sqrt{a^2-4bc}+a}\right)+x^2\log}{\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b/E^x + c*E^x),x]
```

```
[Out] (x^2*Log[1 + (2*c*E^x)/(a - Sqrt[a^2 - 4*b*c])] - x^2*Log[1 + (2*
c*E^x)/(a + Sqrt[a^2 - 4*b*c])] + 2*x*PolyLog[2, (2*c*E^x)/(-a +
Sqrt[a^2 - 4*b*c])] - 2*x*PolyLog[2, (-2*c*E^x)/(a + Sqrt[a^2 - 4
*b*c])] - 2*PolyLog[3, (2*c*E^x)/(-a + Sqrt[a^2 - 4*b*c])] + 2*Po
lyLog[3, (-2*c*E^x)/(a + Sqrt[a^2 - 4*b*c])])/Sqrt[a^2 - 4*b*c]
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int x^2\left(a+\frac{b}{e^x}+ce^x\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] int(x^2/(a+b/exp(x)+c*exp(x)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*e^(-x) + c*e^x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.266704, size = 500, normalized size = 2.05

$$-\frac{bx^2\sqrt{\frac{a^2-4\,bc}{b^2}}\log\left(\frac{2\,ce^x+b\sqrt{\frac{a^2-4\,bc}{b^2}}+a}{b\sqrt{\frac{a^2-4\,bc}{b^2}}+a}\right)-bx^2\sqrt{\frac{a^2-4\,bc}{b^2}}\log\left(-\frac{2\,ce^x-b\sqrt{\frac{a^2-4\,bc}{b^2}}+a}{b\sqrt{\frac{a^2-4\,bc}{b^2}}-a}\right)+2\,bx\sqrt{\frac{a^2-4\,bc}{b^2}}\text{Li}_2\left(-\frac{2\,ce^x+b\sqrt{\frac{a^2-4\,bc}{b^2}}+a}{b\sqrt{\frac{a^2-4\,bc}{b^2}}+a}+1\right)-}{a^2-4\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*e^(-x) + c*e^x + a),x, algorithm="fricas")
```

```
[Out] -(b*x^2*sqrt((a^2 - 4*b*c)/b^2)*log((2*c*e^x + b*sqrt((a^2 - 4*b*
c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) + a)) - b*x^2*sqrt((a^2 -
 4*b*c)/b^2)*log(-(2*c*e^x - b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sq
```

```
rt((a^2 - 4*b*c)/b^2) - a)) + 2*b*x*sqrt((a^2 - 4*b*c)/b^2)*dilog
(-(2*c*e^x + b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)
/b^2) + a) + 1) - 2*b*x*sqrt((a^2 - 4*b*c)/b^2)*dilog((2*c*e^x -
b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) - a) +
1) - 2*b*sqrt((a^2 - 4*b*c)/b^2)*polylog(3, -2*c*e^x/(b*sqrt((a^2
 - 4*b*c)/b^2) + a)) + 2*b*sqrt((a^2 - 4*b*c)/b^2)*polylog(3, 2*c
*e^x/(b*sqrt((a^2 - 4*b*c)/b^2) - a)))/(a^2 - 4*b*c)
```

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

$$\int \frac{x^2e^x}{ae^x + b + ce^{2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(a+b/exp(x)+c*exp(x)),x)
```

```
[Out] Integral(x**2*exp(x)/(a*exp(x) + b + c*exp(2*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{be^{(-x)} + ce^x + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*e^(-x) + c*e^x + a),x, algorithm="giac")
```

```
[Out] integrate(x^2/(b*e^(-x) + c*e^x + a), x)
```

3.540 $\int \frac{1}{a+bf^{-c-dx}+cf^{c+dx}}\,dx$

Optimal. Leaf size=47

$$-\frac{2\tanh^{-1}\left(\frac{a+2cf^{c+dx}}{\sqrt{a^2-4bc}}\right)}{d\log(f)\sqrt{a^2-4bc}}$$

```
[Out] (-2*ArcTanh[(a + 2*c*f^(c + d*x))/Sqrt[a^2 - 4*b*c]])/(Sqrt[a^2 -
 4*b*c]*d*Log[f])
```

Rubi [A] time = 0.123476, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$-\frac{2\tanh^{-1}\left(\frac{a+2cf^{c+dx}}{\sqrt{a^2-4bc}}\right)}{d\log(f)\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*f^(-c - d*x) + c*f^(c + d*x))^(-1),x]
```

```
[Out] (-2*ArcTanh[(a + 2*c*f^(c + d*x))/Sqrt[a^2 - 4*b*c]])/(Sqrt[a^2 -
 4*b*c]*d*Log[f])
```

Rubi in Sympy [A] time = 14.2553, size = 60, normalized size = 1.28

$$-\frac{2f^{-c-dx}f^{c+dx}\operatorname{atanh}\left(\frac{a+2cf^{c+dx}}{\sqrt{a^2-4bc}}\right)}{d\sqrt{a^2-4bc}\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+b*f**(-d*x-c)+c*f**(d*x+c)),x)
```

```
[Out] -2*f**(-c - d*x)*f**(c + d*x)*atanh((a + 2*c*f**(c + d*x))/sqrt(a
**2 - 4*b*c))/(d*sqrt(a**2 - 4*b*c)*log(f))
```

Mathematica [A] time = 0.073438, size = 51, normalized size = 1.09

$$\frac{2\tan^{-1}\left(\frac{a+2cf^{c+dx}}{\sqrt{4bc-a^2}}\right)}{d\log(f)\sqrt{4bc-a^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*f^(-c - d*x) + c*f^(c + d*x))^(-1),x]
```

```
[Out] (2*ArcTan[(a + 2*c*f^(c + d*x))/Sqrt[-a^2 + 4*b*c]])/(Sqrt[-a^2 +
 4*b*c]*d*Log[f])
```

Maple [B] time = 0.044, size = 135, normalized size = 2.9

$$\frac{1}{d\ln(f)}\ln\left(f^{-dx-c}+\frac{1}{2b}\left(a\sqrt{a^2-4cb}+a^2-4cb\right)\frac{1}{\sqrt{a^2-4cb}}\right)\frac{1}{\sqrt{a^2-4cb}}-\frac{1}{d\ln(f)}\ln\left(f^{-dx-c}+\frac{1}{2b}\left(a\sqrt{a^2-4cb}-a^2+4cb\right)\frac{1}{\sqrt{a^2-4cb}}\right)\frac{1}{\sqrt{a^2-4cb}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a+b*f^(-d*x-c)+c*f^(d*x+c)),x)
```

```
[Out] 1/(a^2-4*b*c)^(1/2)/d/ln(f)*ln(f^(-d*x-c)+1/2*(a*(a^2-4*b*c)^(1/2
)+a^2-4*c*b)/b/(a^2-4*b*c)^(1/2))-1/(a^2-4*b*c)^(1/2)/d/ln(f)*ln(
f^(-d*x-c)+1/2*(a*(a^2-4*b*c)^(1/2)-a^2+4*c*b)/b/(a^2-4*b*c)^(1/2
))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.278909, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(\frac{2\sqrt{a^2-4bc}c^2f^{2dx+2c}-a^3+4abc-2\left(a^2c-4bc^2-\sqrt{a^2-4bc}ac\right)f^{dx+c}+\left(a^2-2bc\right)\sqrt{a^2-4bc}}{cf^{2dx+2c}+af^{dx+c}+b}\right)}{\sqrt{a^2-4bc}d\log(f)}, \frac{2\arctan\left(-\frac{2\sqrt{-a^2+4bc}cf^{dx+c}+\sqrt{-a^2+4bc}a}{a^2-4bc}\right)}{\sqrt{-a^2+4bc}d\log(f)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="fricas")
```

```
[Out] [log((2*sqrt(a^2 - 4*b*c)*c^2*f^(2*d*x + 2*c) - a^3 + 4*a*b*c - 2
*(a^2*c - 4*b*c^2 - sqrt(a^2 - 4*b*c)*a*c)*f^(d*x + c) + (a^2 - 2
*b*c)*sqrt(a^2 - 4*b*c))/(c*f^(2*d*x + 2*c) + a*f^(d*x + c) + b))
/(sqrt(a^2 - 4*b*c)*d*log(f)), 2*arctan(-(2*sqrt(-a^2 + 4*b*c)*c*
f^(d*x + c) + sqrt(-a^2 + 4*b*c)*a)/(a^2 - 4*b*c))/(sqrt(-a^2 + 4
*b*c)*d*log(f))]
```

Sympy [A] time = 0.487013, size = 66, normalized size = 1.4

$$\operatorname{RootSum}\left(z^2\left(a^2d^2\log(f)^2-4bcd^2\log(f)^2\right)-1, \left(i\mapsto i\log\left(f^{c+dx}+\frac{-ia^2d\log(f)+4ibcd\log(f)+a}{2c}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+b*f**(-d*x-c)+c*f**(d*x+c)),x)
```

```
[Out] RootSum(_z**2*(a**2*d**2*log(f)**2 - 4*b*c*d**2*log(f)**2) - 1, L
ambda(_i, _i*log(f**(c + d*x) + (-_i*a**2*d*log(f) + 4*_i*b*c*d*l
og(f) + a)/(2*c))))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{cf^{dx+c} + bf^{-dx-c} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="giac")
```

```
[Out] integrate(1/(c*f^(d*x + c) + b*f^(-d*x - c) + a), x)
```

3.541 $\int \frac{x}{a+bf^{-c-dx}+cf^{c+dx}}\,dx$

Optimal. Leaf size=203

$$\frac{\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}-\frac{\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}+\frac{x\log\left(\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}+1\right)}{d\log(f)\sqrt{a^2-4bc}}-\frac{x\log\left(\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}+1\right)}{d\log(f)\sqrt{a^2-4bc}}$$

```
[Out] (x*Log[1 + (2*c*f^(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^2
- 4*b*c]*d*Log[f]) - (x*Log[1 + (2*c*f^(c + d*x))/(a + Sqrt[a^2 -
 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d*Log[f]) + PolyLog[2, (-2*c*f^(c +
 d*x))/(a - Sqrt[a^2 - 4*b*c])]/(Sqrt[a^2 - 4*b*c]*d^2*Log[f]^2)
- PolyLog[2, (-2*c*f^(c + d*x))/(a + Sqrt[a^2 - 4*b*c])]/(Sqrt[a^
2 - 4*b*c]*d^2*Log[f]^2)
```

Rubi [A] time = 0.63392, antiderivative size = 203, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$

$$\frac{\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}-\frac{\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}+\frac{x\log\left(\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}+1\right)}{d\log(f)\sqrt{a^2-4bc}}-\frac{x\log\left(\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}+1\right)}{d\log(f)\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*f^(-c - d*x) + c*f^(c + d*x)),x]
```

```
[Out] (x*Log[1 + (2*c*f^(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^2
- 4*b*c]*d*Log[f]) - (x*Log[1 + (2*c*f^(c + d*x))/(a + Sqrt[a^2 -
 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d*Log[f]) + PolyLog[2, (-2*c*f^(c +
 d*x))/(a - Sqrt[a^2 - 4*b*c])]/(Sqrt[a^2 - 4*b*c]*d^2*Log[f]^2)
- PolyLog[2, (-2*c*f^(c + d*x))/(a + Sqrt[a^2 - 4*b*c])]/(Sqrt[a^
2 - 4*b*c]*d^2*Log[f]^2)
```

Rubi in Sympy [A] time = 71.1219, size = 185, normalized size = 0.91

$$\frac{x\log\left(\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}+1\right)}{d\sqrt{a^2-4bc}\log(f)}-\frac{x\log\left(\frac{2cf^{c+dx}}{a+\sqrt{a^2-4bc}}+1\right)}{d\sqrt{a^2-4bc}\log(f)}+\frac{\text{Li}_2\left(-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^2\sqrt{a^2-4bc}\log(f)^2}-\frac{\text{Li}_2\left(-\frac{2cf^{c+dx}}{a+\sqrt{a^2-4bc}}\right)}{d^2\sqrt{a^2-4bc}\log(f)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(a+b*f**(-d*x-c)+c*f**(d*x+c)),x)
```

```
[Out] x*log(2*c*f**(c + d*x)/(a - sqrt(a**2 - 4*b*c)) + 1)/(d*sqrt(a**2
 - 4*b*c)*log(f)) - x*log(2*c*f**(c + d*x)/(a + sqrt(a**2 - 4*b*c
)) + 1)/(d*sqrt(a**2 - 4*b*c)*log(f)) + polylog(2, -2*c*f**(c + d
*x)/(a - sqrt(a**2 - 4*b*c)))/(d**2*sqrt(a**2 - 4*b*c)*log(f)**2)
 - polylog(2, -2*c*f**(c + d*x)/(a + sqrt(a**2 - 4*b*c)))/(d**2*s
qrt(a**2 - 4*b*c)*log(f)**2)
```

Mathematica [A] time = 10.3683, size = 0, normalized size = 0.

$$\int \frac{x}{a+bf^{-c-dx}+cf^{c+dx}}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[x/(a + b*f^(-c - d*x) + c*f^(c + d*x)),x]
```

```
[Out] Integrate[x/(a + b*f^(-c - d*x) + c*f^(c + d*x)), x]
```

Maple [C] time = 0.048, size = 426, normalized size = 2.1

$$-\frac{x}{d\ln(f)}\ln\left(1\left(-2\,bf^{-dx-c}+\sqrt{a^2-4\,cb}-a\right)\left(-a+\sqrt{a^2-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^2-4\,cb}}+\frac{x}{d\ln(f)}\ln\left(1\left(2\,bf^{-dx-c}+\sqrt{a^2-4\,cb}+a\right)\left(a+\sqrt{a^2-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^2-4\,cb}}-\frac{c}{\ln(f)\,d^2}\ln\left(1\left(-2\,bf^{-dx-c}+\sqrt{a^2-4\,cb}-a\right)\left(-a+\sqrt{a^2-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^2-4\,cb}}+\frac{c}{\ln(f)\,d^2}\ln\left(1\left(2\,bf^{-dx-c}+\sqrt{a^2-4\,cb}+a\right)\left(a+\sqrt{a^2-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^2-4\,cb}}+\frac{1}{(\ln(f))^2\,d^2}dilog\left(1\left(-2\,bf^{-dx-c}+\sqrt{a^2-4\,cb}-a\right)\left(-a+\sqrt{a^2-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^2-4\,cb}}-\frac{1}{(\ln(f))^2\,d^2}dilog\left(1\left(2\,bf^{-dx-c}+\sqrt{a^2-4\,cb}+a\right)\left(a+\sqrt{a^2-4\,cb}\right)^{-1}\right)\frac{1}{\sqrt{a^2-4\,cb}}+2\,\frac{c}{\ln(f)\,d^2\sqrt{-a^2+4\,cb}}\arctan\left(\frac{2\,bf^{-dx-c}+a}{\sqrt{-a^2+4\,cb}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(a+b*f^(-d*x-c)+c*f^(d*x+c)),x)
```

```
[Out] -1/ln(f)/d/(a^2-4*b*c)^(1/2)*ln((-2*b*f^(-d*x-c)+(a^2-4*b*c)^(1/2
)-a)/(-a+(a^2-4*b*c)^(1/2)))*x+1/ln(f)/d/(a^2-4*b*c)^(1/2)*ln((2*
b*f^(-d*x-c)+(a^2-4*b*c)^(1/2)+a)/(a+(a^2-4*b*c)^(1/2)))*x-1/ln(f
)/d^2/(a^2-4*b*c)^(1/2)*ln((-2*b*f^(-d*x-c)+(a^2-4*b*c)^(1/2)-a)/
(-a+(a^2-4*b*c)^(1/2)))*c+1/ln(f)/d^2/(a^2-4*b*c)^(1/2)*ln((2*b*f
^(-d*x-c)+(a^2-4*b*c)^(1/2)+a)/(a+(a^2-4*b*c)^(1/2)))*c+1/ln(f)^2
/d^2/(a^2-4*b*c)^(1/2)*dilog((-2*b*f^(-d*x-c)+(a^2-4*b*c)^(1/2)-a
)/(-a+(a^2-4*b*c)^(1/2)))-1/ln(f)^2/d^2/(a^2-4*b*c)^(1/2)*dilog((
2*b*f^(-d*x-c)+(a^2-4*b*c)^(1/2)+a)/(a+(a^2-4*b*c)^(1/2)))+2/ln(f
)/d^2*c/(-a^2+4*b*c)^(1/2)*arctan((2*b*f^(-d*x-c)+a)/(-a^2+4*b*c)
^(1/2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.305017, size = 558, normalized size = 2.75

$$bc\sqrt{\frac{a^2-4\,bc}{b^2}}\log\left(2\,cf^{dx+c}+b\sqrt{\frac{a^2-4\,bc}{b^2}}+a\right)\log(f)-bc\sqrt{\frac{a^2-4\,bc}{b^2}}\log\left(2\,cf^{dx+c}-b\sqrt{\frac{a^2-4\,bc}{b^2}}+a\right)\log(f)-(bdx+bc)\sqrt{\frac{a^2-4}{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="fricas")
```

```
[Out] (b*c*sqrt((a^2 - 4*b*c)/b^2)*log(2*c*f^(d*x + c) + b*sqrt((a^2 -
4*b*c)/b^2) + a)*log(f) - b*c*sqrt((a^2 - 4*b*c)/b^2)*log(2*c*f^(
d*x + c) - b*sqrt((a^2 - 4*b*c)/b^2) + a)*log(f) - (b*d*x + b*c)*
sqrt((a^2 - 4*b*c)/b^2)*log(f)*log((2*c*f^(d*x + c) + b*sqrt((a^2
 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) + a)) + (b*d*x + b
*c)*sqrt((a^2 - 4*b*c)/b^2)*log(f)*log(-(2*c*f^(d*x + c) - b*sqrt
((a^2 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) - a)) - b*sqr
t((a^2 - 4*b*c)/b^2)*dilog(-(2*c*f^(d*x + c) + b*sqrt((a^2 - 4*b*
c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) + a) + 1) + b*sqrt((a^2 -
 4*b*c)/b^2)*dilog((2*c*f^(d*x + c) - b*sqrt((a^2 - 4*b*c)/b^2) +
 a)/(b*sqrt((a^2 - 4*b*c)/b^2) - a) + 1))/((a^2 - 4*b*c)*d^2*log(
f)^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+b*f**(-d*x-c)+c*f**(d*x+c)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{cf^{dx+c} + bf^{-dx-c} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="giac")
```

```
[Out] integrate(x/(c*f^(d*x + c) + b*f^(-d*x - c) + a), x)
```

3.542 $\int \frac{x^2}{a+bf^{-c-dx}+cf^{c+dx}}\,dx$

Optimal. Leaf size=310

$$-\frac{2\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^3\log^3(f)\sqrt{a^2-4bc}}+\frac{2\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}\right)}{d^3\log^3(f)\sqrt{a^2-4bc}}+\frac{2x\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}-\frac{2x\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}+\frac{x^2\log\left(\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}+1\right)}{d\log(f)\sqrt{a^2-4bc}}-\frac{x^2\log\left(\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}+1\right)}{d\log(f)\sqrt{a^2-4bc}}$$

```
[Out] (x^2*Log[1 + (2*c*f^(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^
2 - 4*b*c]*d*Log[f]) - (x^2*Log[1 + (2*c*f^(c + d*x))/(a + Sqrt[a
^2 - 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d*Log[f]) + (2*x*PolyLog[2, (-2
*c*f^(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d^2*
Log[f]^2) - (2*x*PolyLog[2, (-2*c*f^(c + d*x))/(a + Sqrt[a^2 - 4*
b*c])])/(Sqrt[a^2 - 4*b*c]*d^2*Log[f]^2) - (2*PolyLog[3, (-2*c*f^
(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d^3*Log[f
]^3) + (2*PolyLog[3, (-2*c*f^(c + d*x))/(a + Sqrt[a^2 - 4*b*c])])
/(Sqrt[a^2 - 4*b*c]*d^3*Log[f]^3)
```

Rubi [A] time = 1.07667, antiderivative size = 310, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$

$$-\frac{2\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^3\log^3(f)\sqrt{a^2-4bc}}+\frac{2\text{PolyLog}\left(3,-\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}\right)}{d^3\log^3(f)\sqrt{a^2-4bc}}+\frac{2x\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}-\frac{2x\text{PolyLog}\left(2,-\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}\right)}{d^2\log^2(f)\sqrt{a^2-4bc}}+\frac{x^2\log\left(\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}+1\right)}{d\log(f)\sqrt{a^2-4bc}}-\frac{x^2\log\left(\frac{2cf^{c+dx}}{\sqrt{a^2-4bc}+a}+1\right)}{d\log(f)\sqrt{a^2-4bc}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*f^(-c - d*x) + c*f^(c + d*x)),x]
```

```
[Out] (x^2*Log[1 + (2*c*f^(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^
2 - 4*b*c]*d*Log[f]) - (x^2*Log[1 + (2*c*f^(c + d*x))/(a + Sqrt[a
^2 - 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d*Log[f]) + (2*x*PolyLog[2, (-2
*c*f^(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d^2*
Log[f]^2) - (2*x*PolyLog[2, (-2*c*f^(c + d*x))/(a + Sqrt[a^2 - 4*
b*c])])/(Sqrt[a^2 - 4*b*c]*d^2*Log[f]^2) - (2*PolyLog[3, (-2*c*f^
(c + d*x))/(a - Sqrt[a^2 - 4*b*c])])/(Sqrt[a^2 - 4*b*c]*d^3*Log[f
]^3) + (2*PolyLog[3, (-2*c*f^(c + d*x))/(a + Sqrt[a^2 - 4*b*c])])
/(Sqrt[a^2 - 4*b*c]*d^3*Log[f]^3)
```

Rubi in Sympy [A] time = 112.9, size = 294, normalized size = 0.95

$$\frac{x^2\log\left(\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}+1\right)}{d\sqrt{a^2-4bc}\log(f)}-\frac{x^2\log\left(\frac{2cf^{c+dx}}{a+\sqrt{a^2-4bc}}+1\right)}{d\sqrt{a^2-4bc}\log(f)}+\frac{2x\operatorname{Li}_2\left(-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^2\sqrt{a^2-4bc}\log(f)^2}-\frac{2x\operatorname{Li}_2\left(-\frac{2cf^{c+dx}}{a+\sqrt{a^2-4bc}}\right)}{d^2\sqrt{a^2-4bc}\log(f)^2}-\frac{2\operatorname{Li}_3\left(-\frac{2cf^{c+dx}}{a-\sqrt{a^2-4bc}}\right)}{d^3\sqrt{a^2-4bc}\log(f)^3}+\frac{2\operatorname{Li}_3\left(-\frac{2cf^{c+dx}}{a+\sqrt{a^2-4bc}}\right)}{d^3\sqrt{a^2-4bc}\log(f)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(a+b*f**(-d*x-c)+c*f**(d*x+c)),x)
```

```
[Out] x**2*log(2*c*f**(c + d*x)/(a - sqrt(a**2 - 4*b*c)) + 1)/(d*sqrt(a
**2 - 4*b*c)*log(f)) - x**2*log(2*c*f**(c + d*x)/(a + sqrt(a**2 -
 4*b*c)) + 1)/(d*sqrt(a**2 - 4*b*c)*log(f)) + 2*x*polylog(2, -2*c
*f**(c + d*x)/(a - sqrt(a**2 - 4*b*c)))/(d**2*sqrt(a**2 - 4*b*c)*
log(f)**2) - 2*x*polylog(2, -2*c*f**(c + d*x)/(a + sqrt(a**2 - 4*
b*c)))/(d**2*sqrt(a**2 - 4*b*c)*log(f)**2) - 2*polylog(3, -2*c*f*
*(c + d*x)/(a - sqrt(a**2 - 4*b*c)))/(d**3*sqrt(a**2 - 4*b*c)*log
(f)**3) + 2*polylog(3, -2*c*f**(c + d*x)/(a + sqrt(a**2 - 4*b*c))
)/(d**3*sqrt(a**2 - 4*b*c)*log(f)**3)
```

Mathematica [A] time = 2.08196, size = 0, normalized size = 0.

$$\int \frac{x^2}{a + bf^{-c-dx} + cf^{c+dx}}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[x^2/(a + b*f^(-c - d*x) + c*f^(c + d*x)),x]
```

```
[Out] Integrate[x^2/(a + b*f^(-c - d*x) + c*f^(c + d*x)), x]
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int \frac{x^2}{a + bf^{-dx-c} + cf^{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(a+b*f^(-d*x-c)+c*f^(d*x+c)),x)
```

```
[Out] int(x^2/(a+b*f^(-d*x-c)+c*f^(d*x+c)),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.27693, size = 741, normalized size = 2.39

$$-\frac{bc^2\sqrt{\frac{a^2-4\,bc}{b^2}}\log\left(2\,cf^{dx+c} + b\sqrt{\frac{a^2-4\,bc}{b^2}} + a\right)\log\left(f\right)^2 - bc^2\sqrt{\frac{a^2-4\,bc}{b^2}}\log\left(2\,cf^{dx+c} - b\sqrt{\frac{a^2-4\,bc}{b^2}} + a\right)\log\left(f\right)^2 + 2\,bdx\sqrt{\frac{a^2-}{b}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="fricas")
```

```
[Out] -(b*c^2*sqrt((a^2 - 4*b*c)/b^2)*log(2*c*f^(d*x + c) + b*sqrt((a^2
 - 4*b*c)/b^2) + a)*log(f)^2 - b*c^2*sqrt((a^2 - 4*b*c)/b^2)*log(
2*c*f^(d*x + c) - b*sqrt((a^2 - 4*b*c)/b^2) + a)*log(f)^2 + 2*b*d
*x*sqrt((a^2 - 4*b*c)/b^2)*dilog(-(2*c*f^(d*x + c) + b*sqrt((a^2
- 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) + a) + 1)*log(f) -
2*b*d*x*sqrt((a^2 - 4*b*c)/b^2)*dilog((2*c*f^(d*x + c) - b*sqrt((
a^2 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*c)/b^2) - a) + 1)*log(f
) + (b*d^2*x^2 - b*c^2)*sqrt((a^2 - 4*b*c)/b^2)*log(f)^2*log((2*c
*f^(d*x + c) + b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sqrt((a^2 - 4*b*
c)/b^2) + a)) - (b*d^2*x^2 - b*c^2)*sqrt((a^2 - 4*b*c)/b^2)*log(f
)^2*log(-(2*c*f^(d*x + c) - b*sqrt((a^2 - 4*b*c)/b^2) + a)/(b*sqr
t((a^2 - 4*b*c)/b^2) - a)) - 2*b*sqrt((a^2 - 4*b*c)/b^2)*polylog(
3, -2*c*f^(d*x + c)/(b*sqrt((a^2 - 4*b*c)/b^2) + a)) + 2*b*sqrt((
a^2 - 4*b*c)/b^2)*polylog(3, 2*c*f^(d*x + c)/(b*sqrt((a^2 - 4*b*c
)/b^2) - a)))/((a^2 - 4*b*c)*d^3*log(f)^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(a+b*f**(-d*x-c)+c*f**(d*x+c)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{cf^{dx+c} + bf^{-dx-c} + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(c*f^(d*x + c) + b*f^(-d*x - c) + a),x, algorithm="giac")
```

```
[Out] integrate(x^2/(c*f^(d*x + c) + b*f^(-d*x - c) + a), x)
```

3.543 $\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^n}{df+(ef+dg)x+egx^2}\,dx$

Optimal. Leaf size=53

$$\mathrm{Int}\left(\frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^n}{x(dg+ef)+df+egx^2},x\right)$$

```
[Out] Unintegrable[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^n/(d*f +
 (e*f + d*g)*x + e*g*x^2), x]
```

Rubi [A] time = 0.227332, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\mathrm{Int}\left(\frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^n}{df+(ef+dg)x+egx^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^n/(d*f + (e*f + d*g)*x + e*g*x^2),
```

```
[Out] Defer[Int][(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^n/(d*f + (
e*f + d*g)*x + e*g*x^2), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**n/(d*f+(d*g+e*f)*x+
```

```
[Out] Timed out
```

Mathematica [A] time = 0.253884, size = 0, normalized size = 0.

$$\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^n}{df+(ef+dg)x+egx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^n/(d*f + (e*f + d*g)*x + e*g
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^n/(d*f + (e
*f + d*g)*x + e*g*x^2), x]
```

Maple [A] time = 0.087, size = 0, normalized size = 0.

$$\int \frac{1}{df + (dg + ef)x + egx^2} \left(a + bF^{c\sqrt{ex+d}\,\frac{1}{\sqrt{gx+f}}}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^n/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^n/(d*f+(d*g+e*f)*x+e*
g*x^2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b + a\right)^n}{egx^2 + df + (ef + dg)x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^n/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^n/(e*g*x^2 +
d*f + (e*f + d*g)*x), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^n/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] Exception raised: TypeError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**n/(d*f+(d*g+e*f)*x+e*g*x
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b + a\right)^n}{egx^2 + df + (ef + dg)x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^n/(e*g*x^2 + d*f + (e*f + d*g)

[Out] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^n/(e*g*x^2 +
d*f + (e*f + d*g)*x), x)
```

3.544 $\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^3}{df+(ef+dg)x+egx^2}\,dx$

Optimal. Leaf size=154

$$\frac{2a^3\log\left(\frac{\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{6a^2b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{6ab^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{2b^3\text{ExpIntegralEi}\left(\frac{3c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}$$

```
[Out] (6*a^2*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[f + g*x]])/(
e*f - d*g) + (6*a*b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sq
rt[f + g*x]])/(e*f - d*g) + (2*b^3*ExpIntegralEi[(3*c*Sqrt[d + e*
x]*Log[F])/Sqrt[f + g*x]])/(e*f - d*g) + (2*a^3*Log[Sqrt[d + e*x]
/Sqrt[f + g*x]])/(e*f - d*g)
```

Rubi [A] time = 0.412881, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.06

$$\frac{2a^3\log\left(\frac{\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{6a^2b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{6ab^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{2b^3\text{ExpIntegralEi}\left(\frac{3c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^3/(d*f + (e*f + d*g)*x + e*g*x^2),
```

```
[Out] (6*a^2*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[f + g*x]])/(
e*f - d*g) + (6*a*b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sq
rt[f + g*x]])/(e*f - d*g) + (2*b^3*ExpIntegralEi[(3*c*Sqrt[d + e*
x]*Log[F])/Sqrt[f + g*x]])/(e*f - d*g) + (2*a^3*Log[Sqrt[d + e*x]
/Sqrt[f + g*x]])/(e*f - d*g)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**3/(d*f+(d*g+e*f)*x+
```

```
[Out] Timed out
```

Mathematica [A] time = 1.12633, size = 0, normalized size = 0.

$$\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^3}{df+(ef+dg)x+egx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^3/(d*f + (e*f + d*g)*x + e*g
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^3/(d*f + (e
*f + d*g)*x + e*g*x^2), x]
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int \frac{1}{df+(dg+ef)x+egx^2}\left(a+bF^{c\sqrt{ex+d}\frac{1}{\sqrt{gx+f}}}\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^3/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^3/(d*f+(d*g+e*f)*x+e*
g*x^2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^3\left(\frac{\log(ex+d)}{ef-dg}-\frac{\log(gx+f)}{ef-dg}\right)+b^3\int\frac{F^{\frac{3\sqrt{ex+d}c}{\sqrt{gx+f}}}}{egx^2+df+(ef+dg)x}\,dx$$
$$+3\,ab^2\int\frac{F^{\frac{2\sqrt{ex+d}c}{\sqrt{gx+f}}}}{egx^2+df+(ef+dg)x}\,dx+3\,a^2b\int\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}}{egx^2+df+(ef+dg)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^3/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] a^3*(log(e*x + d)/(e*f - d*g) - log(g*x + f)/(e*f - d*g)) + b^3*i
ntegrate(F^(3*sqrt(e*x + d)*c/sqrt(g*x + f))/(e*g*x^2 + d*f + (e*
f + d*g)*x), x) + 3*a*b^2*integrate(F^(2*sqrt(e*x + d)*c/sqrt(g*x
 + f))/(e*g*x^2 + d*f + (e*f + d*g)*x), x) + 3*a^2*b*integrate(F^
(sqrt(e*x + d)*c/sqrt(g*x + f))/(e*g*x^2 + d*f + (e*f + d*g)*x),
x)
```

Fricas [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^3/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] Timed out
```

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

$$\int\frac{\left(F^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}b+a\right)^3}{(d+ex)(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**3/(d*f+(d*g+e*f)*x+e*g*x
```

```
[Out] Integral((F**(c*sqrt(d + e*x)/sqrt(f + g*x))*b + a)**3/((d + e*x)
*(f + g*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b+a\right)^3}{egx^2+df+(ef+dg)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^3/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^3/(e*g*x^2 +
d*f + (e*f + d*g)*x), x)
```

3.545 $\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^2}{df+(ef+dg)x+egx^2}\,dx$

Optimal. Leaf size=112

$$\frac{2a^2\log\left(\frac{\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{4ab\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{2b^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}$$

```
[Out] (4*a*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[f + g*x]])/(e*
f - d*g) + (2*b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sqrt[f
 + g*x]])/(e*f - d*g) + (2*a^2*Log[Sqrt[d + e*x]/Sqrt[f + g*x]])/
(e*f - d*g)
```

Rubi [A] time = 0.369297, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.06

$$\frac{2a^2\log\left(\frac{\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{4ab\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{2b^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2/(d*f + (e*f + d*g)*x + e*g*x^2),
```

```
[Out] (4*a*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[f + g*x]])/(e*
f - d*g) + (2*b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sqrt[f
 + g*x]])/(e*f - d*g) + (2*a^2*Log[Sqrt[d + e*x]/Sqrt[f + g*x]])/
(e*f - d*g)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**2/(d*f+(d*g+e*f)*x+
```

```
[Out] Timed out
```

Mathematica [A] time = 0.631699, size = 0, normalized size = 0.

$$\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^2}{df+(ef+dg)x+egx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2/(d*f + (e*f + d*g)*x + e*g
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2/(d*f + (e
*f + d*g)*x + e*g*x^2), x]
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int \frac{1}{df+(dg+ef)x+egx^2}\left(a+bF^{c\sqrt{ex+d}\frac{1}{\sqrt{gx+f}}}\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^2/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^2/(d*f+(d*g+e*f)*x+e*
g*x^2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a^2\left(\frac{\log(ex+d)}{ef-dg}-\frac{\log(gx+f)}{ef-dg}\right)+b^2\int\frac{F^{\frac{2\sqrt{ex+d}c}{\sqrt{gx+f}}}}{egx^2+df+(ef+dg)x}\,dx+2\,ab\int\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}}{egx^2+df+(ef+dg)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^2/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] a^2*(log(e*x + d)/(e*f - d*g) - log(g*x + f)/(e*f - d*g)) + b^2*i
ntegrate(F^(2*sqrt(e*x + d)*c/sqrt(g*x + f))/(e*g*x^2 + d*f + (e*
f + d*g)*x), x) + 2*a*b*integrate(F^(sqrt(e*x + d)*c/sqrt(g*x + f
))/(e*g*x^2 + d*f + (e*f + d*g)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{2\,F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}ab+F^{\frac{2\sqrt{ex+d}c}{\sqrt{gx+f}}}b^2+a^2}{egx^2+df+(ef+dg)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^2/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] integral((2*F^(sqrt(e*x + d)*c/sqrt(g*x + f))*a*b + F^(2*sqrt(e*x
 + d)*c/sqrt(g*x + f))*b^2 + a^2)/(e*g*x^2 + d*f + (e*f + d*g)*x)
, x)
```

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

$$\int\frac{\left(F^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}b+a\right)^2}{(d+ex)(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**2/(d*f+(d*g+e*f)*x+e*g*x
```

```
[Out] Integral((F**(c*sqrt(d + e*x)/sqrt(f + g*x))*b + a)**2/((d + e*x)
*(f + g*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b+a\right)^2}{egx^2+df+(ef+dg)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^2/(e*g*x^2 + d*f + (e*f + d*g)
```

```
[Out] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)^2/(e*g*x^2 +
d*f + (e*f + d*g)*x), x)
```

3.546 $\int \frac{a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}}{df+(ef+dg)x+egx^2}\,dx$

Optimal. Leaf size=70

$$\frac{2a\log\left(\frac{\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{2b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}$$

```
[Out] (2*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[f + g*x]])/(e*f
- d*g) + (2*a*Log[Sqrt[d + e*x]/Sqrt[f + g*x]])/(e*f - d*g)
```

Rubi [A] time = 0.202395, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 48, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{2a\log\left(\frac{\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}+\frac{2b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{f+gx}}\right)}{ef-dg}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))/(d*f + (e*f + d*g)*x + e*g*x^2),x]
```

```
[Out] (2*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[f + g*x]])/(e*f
- d*g) + (2*a*Log[Sqrt[d + e*x]/Sqrt[f + g*x]])/(e*f - d*g)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))/(d*f+(d*g+e*f)*x+e*g
```

```
[Out] Timed out
```

Mathematica [A] time = 0.365816, size = 0, normalized size = 0.

$$\int \frac{a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}}{df+(ef+dg)x+egx^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))/(d*f + (e*f + d*g)*x + e*g*x
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))/(d*f + (e*f
 + d*g)*x + e*g*x^2), x]
```

Maple [F] time = 0.067, size = 0, normalized size = 0.

$$\int \frac{1}{df+(dg+ef)x+egx^2}\left(a+bF^{c\sqrt{ex+d}\frac{1}{\sqrt{gx+f}}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))/(d*f+(d*g+e*f)*x+e*g*
x^2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$a\left(\frac{\log(ex+d)}{ef-dg}-\frac{\log(gx+f)}{ef-dg}\right)+b\int\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}}{egx^2+df+(ef+dg)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)/(e*g*x^2 + d*f + (e*f + d*g)*x
```

```
[Out] a*(log(e*x + d)/(e*f - d*g) - log(g*x + f)/(e*f - d*g)) + b*integ
rate(F^(sqrt(e*x + d)*c/sqrt(g*x + f))/(e*g*x^2 + d*f + (e*f + d*
g)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b+a}{egx^2+df+(ef+dg)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)/(e*g*x^2 + d*f + (e*f + d*g)*x
```

```
[Out] integral((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)/(e*g*x^2 + d*f
 + (e*f + d*g)*x), x)
```

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

$$\int\frac{F^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}b+a}{(d+ex)(f+gx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))/(d*f+(d*g+e*f)*x+e*g*x**2
```

```
[Out] Integral((F**(c*sqrt(d + e*x)/sqrt(f + g*x))*b + a)/((d + e*x)*(f
 + g*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b+a}{egx^2+df+(ef+dg)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)/(e*g*x^2 + d*f + (e*f + d*g)*x

[Out] integrate((F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b + a)/(e*g*x^2 + d*
f + (e*f + d*g)*x), x)
```

3.547 $\int \frac{1}{df+(ef+dg)x+egx^2}\,dx$

Optimal. Leaf size=36

$$\frac{\log(d+ex)}{ef-dg}-\frac{\log(f+gx)}{ef-dg}$$

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

Rubi [A] time = 0.028643, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{\log(d+ex)}{ef-dg}-\frac{\log(f+gx)}{ef-dg}$$

Antiderivative was successfully verified.

```
[In] Int[(d*f + (e*f + d*g)*x + e*g*x^2)^(-1),x]

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

Rubi in Sympy [A] time = 5.3512, size = 31, normalized size = 0.86

$$-\frac{2\operatorname{atanh}\left(\frac{dg+ef+2egx}{dg-ef}\right)}{dg-ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(d*f+(d*g+e*f)*x+e*g*x**2),x)

[Out] -2*atanh((d*g + e*f + 2*e*g*x)/(d*g - e*f))/(d*g - e*f)
```

Mathematica [A] time = 0.0146437, size = 26, normalized size = 0.72

$$\frac{\log(d+ex)-\log(f+gx)}{ef-dg}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*f + (e*f + d*g)*x + e*g*x^2)^(-1),x]

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

Maple [A] time = 0.01, size = 37, normalized size = 1.

$$-\frac{\ln(ex+d)}{dg-ef}+\frac{\ln(gx+f)}{dg-ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

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

Maxima [A] time = 0.808381, size = 49, normalized size = 1.36

$$\frac{\log\left(ex+d\right)}{ef-dg}-\frac{\log\left(gx+f\right)}{ef-dg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e*g*x^2 + d*f + (e*f + d*g)*x),x, algorithm="maxima")
```

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

Fricas [A] time = 0.265304, size = 35, normalized size = 0.97

$$\frac{\log\left(ex+d\right)-\log\left(gx+f\right)}{ef-dg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e*g*x^2 + d*f + (e*f + d*g)*x),x, algorithm="fricas")
```

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

Sympy [A] time = 0.466865, size = 128, normalized size = 3.56

$$\frac{\log\left(x+\frac{-\frac{d^2g^2}{dg-ef}+\frac{2defg}{dg-ef}+dg-\frac{e^2f^2}{dg-ef}+ef}{2eg}\right)}{dg-ef}-\frac{\log\left(x+\frac{\frac{d^2g^2}{dg-ef}-\frac{2defg}{dg-ef}+dg+\frac{e^2f^2}{dg-ef}+ef}{2eg}\right)}{dg-ef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*f+(d*g+e*f)*x+e*g*x**2),x)
```

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

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e*g*x^2 + d*f + (e*f + d*g)*x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.548 $\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)(df+(ef+dg)x+egx^2)}\,dx$

Optimal. Leaf size=53

$$\text{Int}\left(\frac{1}{(x(dg+ef)+df+egx^2)\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)},x\right)$$

```
[Out] Unintegrable[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))*(d*f
+ (e*f + d*g)*x + e*g*x^2)), x]
```

Rubi [A] time = 0.239308, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)(df+(ef+dg)x+egx^2)},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))*(d*f + (e*f + d*g)*x + e*g*x^2)
```

```
[Out] Defer[Int][1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))*(d*f +
(e*f + d*g)*x + e*g*x^2)), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))/(d*f+(d*g+e*f)*x+e
```

```
[Out] Timed out
```

Mathematica [A] time = 0.174255, size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)(df+(ef+dg)x+egx^2)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))*(d*f + (e*f + d*g)*x + e*
```

```
[Out] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))*(d*f + (
e*f + d*g)*x + e*g*x^2)), x]
```

Maple [A] time = 0.069, size = 0, normalized size = 0.

$$\int \frac{1}{df+(dg+ef)x+egx^2}\left(a+bF^{c\sqrt{ex+d}\frac{1}{\sqrt{gx+f}}}\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

```
[Out] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))/(d*f+(d*g+e*f)*x+e*
g*x^2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(egx^2+df+(ef+dg)x)\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b
```

```
[Out] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/
sqrt(g*x + f))*b + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{aegx^2+adf+(begx^2+bdf+(bef+bdg)x)F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}+(aef+adg)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b
```

```
[Out] integral(1/(a*e*g*x^2 + a*d*f + (b*e*g*x^2 + b*d*f + (b*e*f + b*d
*g)*x)*F^(sqrt(e*x + d)*c/sqrt(g*x + f)) + (a*e*f + a*d*g)*x), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))/(d*f+(d*g+e*f)*x+e*g*x*
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(egx^2+df+(ef+dg)x)\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b
```

```
[Out] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/
sqrt(g*x + f))*b + a)), x)
```

3.549 $\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^2 (df+(ef+dg)x+egx^2)}\,dx$

Optimal. Leaf size=53

$$\operatorname{Int}\left(\frac{1}{(x(dg+ef)+df+egx^2)\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^2},x\right)$$

```
[Out] Unintegrable[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2*(d*
f + (e*f + d*g)*x + e*g*x^2)), x]
```

Rubi [A] time = 0.227326, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\operatorname{Int}\left(\frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^2 (df+(ef+dg)x+egx^2)},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2*(d*f + (e*f + d*g)*x + e*g*x^
```

```
[Out] Defer[Int][1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2*(d*f
+ (e*f + d*g)*x + e*g*x^2)), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**2/(d*f+(d*g+e*f)*
```

```
[Out] Timed out
```

Mathematica [A] time = 1.5207, size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{f+gx}}}\right)^2 (df+(ef+dg)x+egx^2)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2*(d*f + (e*f + d*g)*x +
```

```
[Out] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[f + g*x]))^2*(d*f +
 (e*f + d*g)*x + e*g*x^2)), x]
```

Maple [A] time = 0.069, size = 0, normalized size = 0.

$$\int \frac{1}{df+(dg+ef)\,x+egx^2}\left(a+bF^{c\sqrt{ex+d}\,\frac{1}{\sqrt{gx+f}}}\right)^{-2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^2/(d*f+(d*g+e*f)*x+e*g*x^2),x)
```

```
[Out] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(g*x+f)^(1/2)))^2/(d*f+(d*g+e*f)*x+
e*g*x^2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\frac{2\sqrt{gx+f}}{(ef-dg)\sqrt{ex+d}F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}abc\log(F)+(ef-dg)\sqrt{ex+d}a^2c\log(F)} + \int \frac{\sqrt{ex+d}c\log(F)+\sqrt{gx+f}}{(abcegx^2\log(F)+abcdf\log(F)+(ef+dg)abcx\log(F))\sqrt{ex+d}F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}+(a^2cegx^2\log(F)+a^2cdf\log(F)+(ef+dg)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b
```

```
[Out] 2*sqrt(g*x + f)/((e*f - d*g)*sqrt(e*x + d)*F^(sqrt(e*x + d)*c/sqr
t(g*x + f))*a*b*c*log(F) + (e*f - d*g)*sqrt(e*x + d)*a^2*c*log(F)
) + integrate((sqrt(e*x + d)*c*log(F) + sqrt(g*x + f))/((a*b*c*e*
g*x^2*log(F) + a*b*c*d*f*log(F) + (e*f + d*g)*a*b*c*x*log(F))*sqr
t(e*x + d)*F^(sqrt(e*x + d)*c/sqrt(g*x + f)) + (a^2*c*e*g*x^2*log
(F) + a^2*c*d*f*log(F) + (e*f + d*g)*a^2*c*x*log(F))*sqrt(e*x + d
)), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b
```

```
[Out] Exception raised: TypeError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(g*x+f)**(1/2)))**2/(d*f+(d*g+e*f)*x+e*g
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(egx^2 + df + (ef + dg)x)\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{gx+f}}}b + a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/sqrt(g*x + f))*b
```

```
[Out] integrate(1/((e*g*x^2 + d*f + (e*f + d*g)*x)*(F^(sqrt(e*x + d)*c/
sqrt(g*x + f))*b + a)^2), x)
```

3.550 $\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^n}{d^2-e^2x^2}\,dx$

Optimal. Leaf size=50

$$\text{Int}\left(\frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^n}{d^2-e^2x^2},x\right)$$

```
[Out] Unintegrable[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^n/(d
^2 - e^2*x^2), x]
```

Rubi [A] time = 0.354633, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^n}{d^2-e^2x^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^n/(d^2 - e^2*x^2),x]
```

```
[Out] Defer[Int][(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^n/(d^2
 - e^2*x^2), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**n/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.223423, size = 0, normalized size = 0.

$$\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^n}{d^2-e^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^n/(d^2 - e^2*x^2),x]
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^n/(d^2
- e^2*x^2), x]
```

Maple [A] time = 0.043, size = 0, normalized size = 0.

$$\int \frac{1}{-e^2x^2+d^2}\left(a+bF^{c\sqrt{ex+d}\,\frac{1}{\sqrt{-efx+df}}}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^n/(-e^2*x^2+d^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^n/(-e^2*x^2+d^2)
,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\int \frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a\right)^n}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^n/(e^2*x^2 - d^2),x, al
```

```
[Out] -integrate((F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^n/(e^2*
x^2 - d^2), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^n/(e^2*x^2 - d^2),x, al
```

```
[Out] Exception raised: TypeError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**n/(-e**2*x**2+d**2)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a\right)^n}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^n/(e^2*x^2 - d^2),x, al
```

```
[Out] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^n/(e^2*
x^2 - d^2), x)
```

3.551 $\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^3}{d^2-e^2x^2} dx$

Optimal. Leaf size=152

$$\frac{a^3 \log\left(\frac{\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{3a^2b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{3ab^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{b^3\text{ExpIntegralEi}\left(\frac{3c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}$$

```
[Out] (3*a^2*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f - e*f*x]
])/(d*e) + (3*a*b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sqrt
[d*f - e*f*x]])/(d*e) + (b^3*ExpIntegralEi[(3*c*Sqrt[d + e*x]*Log
[F])/Sqrt[d*f - e*f*x]])/(d*e) + (a^3*Log[Sqrt[d + e*x]/Sqrt[d*f
- e*f*x]])/(d*e)
```

Rubi [A] time = 0.514673, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.064

$$\frac{a^3 \log\left(\frac{\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{3a^2b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{3ab^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{b^3\text{ExpIntegralEi}\left(\frac{3c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^3/(d^2 - e^2*x^2),x]
```

```
[Out] (3*a^2*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f - e*f*x]
])/(d*e) + (3*a*b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sqrt
[d*f - e*f*x]])/(d*e) + (b^3*ExpIntegralEi[(3*c*Sqrt[d + e*x]*Log
[F])/Sqrt[d*f - e*f*x]])/(d*e) + (a^3*Log[Sqrt[d + e*x]/Sqrt[d*f
- e*f*x]])/(d*e)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**3/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.876311, size = 0, normalized size = 0.

$$\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^3}{d^2-e^2x^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^3/(d^2 - e^2*x^2),x]
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^3/(d^2
- e^2*x^2), x]
```

Maple [F] time = 0.024, size = 0, normalized size = 0.

$$\int \frac{1}{-e^{2} x^{2}+d^{2}} \left(a+b F^{c \sqrt{e x+d}\, \frac{1}{\sqrt{-e f x+d f}}}\right)^{3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^3/(-e^2*x^2+d^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^3/(-e^2*x^2+d^2)
,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2} a^{3} \left(\frac{\log\left(ex+d\right)}{de} - \frac{\log\left(ex-d\right)}{de}\right) - b^{3} \int \frac{F^{\frac{3 \sqrt{ex+d} c}{\sqrt{-ex+d} \sqrt{f}}}}{e^{2} x^{2} - d^{2}}\, dx - 3\, a b^{2} \int \frac{F^{\frac{2 \sqrt{ex+d} c}{\sqrt{-ex+d} \sqrt{f}}}}{e^{2} x^{2} - d^{2}}\, dx - 3\, a^{2} b \int \frac{F^{\frac{\sqrt{ex+d} c}{\sqrt{-ex+d} \sqrt{f}}}}{e^{2} x^{2} - d^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^3/(e^2*x^2 - d^2),x, al
```

```
[Out] 1/2*a^3*(log(e*x + d)/(d*e) - log(e*x - d)/(d*e)) - b^3*integrate
(F^(3*sqrt(e*x + d)*c/(sqrt(-e*x + d)*sqrt(f)))/(e^2*x^2 - d^2),
x) - 3*a*b^2*integrate(F^(2*sqrt(e*x + d)*c/(sqrt(-e*x + d)*sqrt(
f)))/(e^2*x^2 - d^2), x) - 3*a^2*b*integrate(F^(sqrt(e*x + d)*c/(
sqrt(-e*x + d)*sqrt(f)))/(e^2*x^2 - d^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$${\rm integral}\left(-\frac{3\, F^{\frac{\sqrt{ex+d} c}{\sqrt{-efx+df}}} a^{2} b + 3\, F^{\frac{2 \sqrt{ex+d} c}{\sqrt{-efx+df}}} a b^{2} + F^{\frac{3 \sqrt{ex+d} c}{\sqrt{-efx+df}}} b^{3} + a^{3}}{e^{2} x^{2} - d^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^3/(e^2*x^2 - d^2),x, al
```

```
[Out] integral(-(3*F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*a^2*b + 3*F^(
2*sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*a*b^2 + F^(3*sqrt(e*x + d)*
c/sqrt(-e*f*x + d*f))*b^3 + a^3)/(e^2*x^2 - d^2), x)
```

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

$$-\int \frac{a^{3}}{-d^{2} + e^{2} x^{2}}\, dx - \int \frac{F^{\frac{3c\sqrt{d+ex}}{\sqrt{df-efx}}} b^{3}}{-d^{2} + e^{2} x^{2}}\, dx - \int \frac{3 F^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}} a^{2} b}{-d^{2} + e^{2} x^{2}}\, dx - \int \frac{3 F^{\frac{2c\sqrt{d+ex}}{\sqrt{df-efx}}} a b^{2}}{-d^{2} + e^{2} x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**3/(-e**2*x**2+d**2)
```

```
[Out] -Integral(a**3/(-d**2 + e**2*x**2), x) - Integral(F**(3*c*sqrt(d
+ e*x)/sqrt(d*f - e*f*x))*b**3/(-d**2 + e**2*x**2), x) - Integral
(3*F**(c*sqrt(d + e*x)/sqrt(d*f - e*f*x))*a**2*b/(-d**2 + e**2*x*
*2), x) - Integral(3*F**(2*c*sqrt(d + e*x)/sqrt(d*f - e*f*x))*a*b
**2/(-d**2 + e**2*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a\right)^3}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^3/(e^2*x^2 - d^2),x, al
```

```
[Out] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^3/(e^2*
x^2 - d^2), x)
```

3.552 $\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^2}{d^2-e^2x^2} dx$

Optimal. Leaf size=110

$$\frac{a^2\log\left(\frac{\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{2ab\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{b^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}$$

```
[Out] (2*a*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f - e*f*x]])
/(d*e) + (b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f -
 e*f*x]])/(d*e) + (a^2*Log[Sqrt[d + e*x]/Sqrt[d*f - e*f*x]])/(d*e
)
```

Rubi [A] time = 0.483039, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.064

$$\frac{a^2\log\left(\frac{\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{2ab\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{b^2\text{ExpIntegralEi}\left(\frac{2c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2/(d^2 - e^2*x^2),x]
```

```
[Out] (2*a*b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f - e*f*x]])
/(d*e) + (b^2*ExpIntegralEi[(2*c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f -
 e*f*x]])/(d*e) + (a^2*Log[Sqrt[d + e*x]/Sqrt[d*f - e*f*x]])/(d*e
)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**2/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.598847, size = 0, normalized size = 0.

$$\int \frac{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^2}{d^2-e^2x^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2/(d^2 - e^2*x^2),x]
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2/(d^2
- e^2*x^2), x]
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int \frac{1}{-e^2x^2+d^2}\left(a+bF^{c\sqrt{ex+d}\,\frac{1}{\sqrt{-efx+df}}}\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^2/(-e^2*x^2+d^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^2/(-e^2*x^2+d^2)
,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,a^2\left(\frac{\log\left(ex+d\right)}{de}-\frac{\log\left(ex-d\right)}{de}\right)-b^2\int\frac{F^{\frac{2\sqrt{ex+d}c}{\sqrt{-ex+d}\sqrt{f}}}}{e^2x^2-d^2}\,dx-2\,ab\int\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{-ex+d}\sqrt{f}}}}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2/(e^2*x^2 - d^2),x, al
```

```
[Out] 1/2*a^2*(log(e*x + d)/(d*e) - log(e*x - d)/(d*e)) - b^2*integrate
(F^(2*sqrt(e*x + d)*c/(sqrt(-e*x + d)*sqrt(f)))/(e^2*x^2 - d^2),
x) - 2*a*b*integrate(F^(sqrt(e*x + d)*c/(sqrt(-e*x + d)*sqrt(f)))
/(e^2*x^2 - d^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{2\,F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}ab+F^{\frac{2\sqrt{ex+d}c}{\sqrt{-efx+df}}}b^2+a^2}{e^2x^2-d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2/(e^2*x^2 - d^2),x, al
```

```
[Out] integral(-(2*F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*a*b + F^(2*sq
rt(e*x + d)*c/sqrt(-e*f*x + d*f))*b^2 + a^2)/(e^2*x^2 - d^2), x)
```

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

$$-\int\frac{a^2}{-d^2+e^2x^2}\,dx-\int\frac{F^{\frac{2c\sqrt{d+ex}}{\sqrt{df-efx}}}b^2}{-d^2+e^2x^2}\,dx-\int\frac{2F^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}ab}{-d^2+e^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**2/(-e**2*x**2+d**2)
```

```
[Out] -Integral(a**2/(-d**2 + e**2*x**2), x) - Integral(F**(2*c*sqrt(d
+ e*x)/sqrt(d*f - e*f*x))*b**2/(-d**2 + e**2*x**2), x) - Integral
(2*F**(c*sqrt(d + e*x)/sqrt(d*f - e*f*x))*a*b/(-d**2 + e**2*x**2)
```

```
, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a\right)^2}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2/(e^2*x^2 - d^2),x, al
```

```
[Out] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2/(e^2*
x^2 - d^2), x)
```

3.553 $\int \frac{a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}}{d^2-e^2x^2}\,dx$

Optimal. Leaf size=68

$$\frac{a\log\left(\frac{\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}$$

```
[Out] (b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f - e*f*x]])/(d*
e) + (a*Log[Sqrt[d + e*x]/Sqrt[d*f - e*f*x]])/(d*e)
```

Rubi [A] time = 0.286385, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 45, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{a\log\left(\frac{\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}+\frac{b\text{ExpIntegralEi}\left(\frac{c\log(F)\sqrt{d+ex}}{\sqrt{df-efx}}\right)}{de}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))/(d^2 - e^2*x^2),x]
```

```
[Out] (b*ExpIntegralEi[(c*Sqrt[d + e*x]*Log[F])/Sqrt[d*f - e*f*x]])/(d*
e) + (a*Log[Sqrt[d + e*x]/Sqrt[d*f - e*f*x]])/(d*e)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.275299, size = 0, normalized size = 0.

$$\int \frac{a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}}{d^2-e^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))/(d^2 - e^2*x^2),x]
```

```
[Out] Integrate[(a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))/(d^2 -
e^2*x^2), x]
```

Maple [F] time = 0.023, size = 0, normalized size = 0.

$$\int \frac{1}{-e^2x^2+d^2}\left(a+bF^{c\sqrt{ex+d}\frac{1}{\sqrt{-efx+df}}}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))/(-e^2*x^2+d^2),x)
```

```
[Out] int((a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))/(-e^2*x^2+d^2),x
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{1}{2}\,a\left(\frac{\log\left(ex+d\right)}{de}-\frac{\log\left(ex-d\right)}{de}\right)-b\int\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{-ex+d}\sqrt{f}}}}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)/(e^2*x^2 - d^2),x, algo
```

```
[Out] 1/2*a*(log(e*x + d)/(d*e) - log(e*x - d)/(d*e)) - b*integrate(F^(
sqrt(e*x + d)*c/(sqrt(-e*x + d)*sqrt(f)))/(e^2*x^2 - d^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a}{e^2x^2-d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)/(e^2*x^2 - d^2),x, algo
```

```
[Out] integral(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)/(e^2*x^2
 - d^2), x)
```

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

$$-\int\frac{a}{-d^2+e^2x^2}\,dx-\int\frac{F^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}b}{-d^2+e^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))/(-e**2*x**2+d**2),x)
```

```
[Out] -Integral(a/(-d**2 + e**2*x**2), x) - Integral(F**(c*sqrt(d + e*x
)/sqrt(d*f - e*f*x))*b/(-d**2 + e**2*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int-\frac{F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a}{e^2x^2-d^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)/(e^2*x^2 - d^2),x, algo
```

```
[Out] integrate(-(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)/(e^2*x^
2 - d^2), x)
```

3.554 $\int \frac{1}{d^2-e^2x^2} dx$

Optimal. Leaf size=14

$$\frac{\tanh^{-1}\left(\frac{ex}{d}\right)}{de}$$

```
[Out] ArcTanh[(e*x)/d]/(d*e)
```

Rubi [A] time = 0.0169764, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071

$$\frac{\tanh^{-1}\left(\frac{ex}{d}\right)}{de}$$

Antiderivative was successfully verified.

```
[In]  Int[(d^2 - e^2*x^2)^(-1),x]

[Out] ArcTanh[(e*x)/d]/(d*e)
```

Rubi in Sympy [A] time = 6.51866, size = 8, normalized size = 0.57

$$\frac{\operatorname{atanh}\left(\frac{ex}{d}\right)}{de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-e**2*x**2+d**2),x)

[Out] atanh(e*x/d)/(d*e)
```

Mathematica [A] time = 0.00439945, size = 14, normalized size = 1.

$$\frac{\tanh^{-1}\left(\frac{ex}{d}\right)}{de}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d^2 - e^2*x^2)^(-1),x]

[Out] ArcTanh[(e*x)/d]/(d*e)
```

Maple [B] time = 0.007, size = 32, normalized size = 2.3

$$-\frac{\ln(ex-d)}{2ed}+\frac{\ln(ex+d)}{2ed}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-e^2*x^2+d^2),x)
```

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

Maxima [A] time = 0.785331, size = 42, normalized size = 3.

$$\frac{\log(ex+d)}{2\,de} - \frac{\log(ex-d)}{2\,de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^2*x^2 - d^2),x, algorithm="maxima")
```

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

Fricas [A] time = 0.248668, size = 34, normalized size = 2.43

$$\frac{\log(ex+d) - \log(ex-d)}{2\,de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^2*x^2 - d^2),x, algorithm="fricas")
```

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

Sympy [A] time = 0.150357, size = 20, normalized size = 1.43

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-e**2*x**2+d**2),x)
```

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

GIAC/XCAS [A] time = 0.229488, size = 51, normalized size = 3.64

$$-\frac{e^{(-1)}\ln\left(\frac{|2\,xe^2-2\,|d|e|}{|2\,xe^2+2\,|d|e|}\right)}{2\,|d|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^2*x^2 - d^2),x, algorithm="giac")
```

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

3.555 $\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)(d^2-e^2x^2)}\,dx$

Optimal. Leaf size=50

$$\text{Int}\left(\frac{1}{(d^2-e^2x^2)\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)},x\right)$$

```
[Out] Unintegrable[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))*(
d^2 - e^2*x^2)), x]
```

Rubi [A] time = 0.357492, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)(d^2-e^2x^2)},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))*(d^2 - e^2*x^2)),x]
```

```
[Out] Defer[Int][1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))*(d^
2 - e^2*x^2)), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.194608, size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)(d^2-e^2x^2)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))*(d^2 - e^2*x^2)),x]
```

```
[Out] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))*(d^2
 - e^2*x^2)), x]
```

Maple [A] time = 0.024, size = 0, normalized size = 0.

$$\int \frac{1}{-e^2x^2+d^2}\left(a+bF^{c\sqrt{ex+d}\frac{1}{\sqrt{-efx+df}}}\right)^{-1} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))/(-e^2*x^2+d^2),x)
```

```
[Out] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))/(-e^2*x^2+d^2)
,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$-\int \frac{1}{(e^2x^2-d^2)\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)),x,
```

```
[Out] -integrate(1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d
*f))*b + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{1}{ae^2x^2-ad^2+(be^2x^2-bd^2)F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)),x,
```

```
[Out] integral(-1/(a*e^2*x^2 - a*d^2 + (b*e^2*x^2 - b*d^2)*F^(sqrt(e*x
+ d)*c/sqrt(-e*f*x + d*f))), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$-\int \frac{1}{-F^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}bd^2+F^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}be^2x^2-ad^2+ae^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))/(-e**2*x**2+d**2),
```

```
[Out] -Integral(1/(-F**(c*sqrt(d + e*x)/sqrt(d*f - e*f*x))*b*d**2 + F**
(c*sqrt(d + e*x)/sqrt(d*f - e*f*x))*b*e**2*x**2 - a*d**2 + a*e**2
*x**2), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int -\frac{1}{(e^2x^2 - d^2)\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)),x,
```

```
[Out] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d
*f))*b + a)), x)
```

3.556 $\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^2(d^2-e^2x^2)}\,dx$

Optimal. Leaf size=50

$$\text{Int}\left(\frac{1}{(d^2-e^2x^2)\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^2},x\right)$$

```
[Out] Unintegrable[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2
*(d^2 - e^2*x^2)), x]
```

Rubi [A] time = 0.340476, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^2(d^2-e^2x^2)},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2*(d^2 - e^2*x^2)),x]
```

```
[Out] Defer[Int][1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2*(
d^2 - e^2*x^2)), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**2/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 1.6463, size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+bF^{\frac{c\sqrt{d+ex}}{\sqrt{df-efx}}}\right)^2(d^2-e^2x^2)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2*(d^2 - e^2*x^2)),x
```

```
[Out] Integrate[1/((a + b*F^((c*Sqrt[d + e*x])/Sqrt[d*f - e*f*x]))^2*(d
^2 - e^2*x^2)), x]
```

Maple [A] time = 0.024, size = 0, normalized size = 0.

$$\int \frac{1}{-e^2x^2+d^2}\left(a+bF^{c\sqrt{ex+d}\,\frac{1}{\sqrt{-efx+df}}}\right)^{-2}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^2/(-e^2*x^2+d^2),x)
```

```
[Out] int(1/(a+b*F^(c*(e*x+d)^(1/2)/(-e*f*x+d*f)^(1/2)))^2/(-e^2*x^2+d^
2),x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2),x
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2),x
```

```
[Out] Exception raised: TypeError
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+b*F**(c*(e*x+d)**(1/2)/(-e*f*x+d*f)**(1/2)))**2/(-
e**2*x**2+d**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int -\frac{1}{\left(e^2x^2-d^2\right)\left(F^{\frac{\sqrt{ex+d}c}{\sqrt{-efx+df}}}b+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d*f))*b + a)^2),x
```

```
[Out] integrate(-1/((e^2*x^2 - d^2)*(F^(sqrt(e*x + d)*c/sqrt(-e*f*x + d
*f))*b + a)^2), x)
```

3.557 $\int \frac{\left(F^{\frac{\sqrt{1-ax}}{\sqrt{1+ax}}}\right)^n}{1-a^2x^2}\,dx$

Optimal. Leaf size=77

$$-\frac{F^{-\frac{n\sqrt{1-ax}}{\sqrt{ax+1}}}\left(F^{\frac{\sqrt{1-ax}}{\sqrt{ax+1}}}\right)^n \text{ExpIntegralEi}\left(\frac{n\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

```
[Out] -(((F^(Sqrt[1 - a*x]/Sqrt[1 + a*x]))^n*ExpIntegralEi[(n*Sqrt[1 -
a*x]*Log[F])/Sqrt[1 + a*x]])/(a*F^((n*Sqrt[1 - a*x])/Sqrt[1 + a*x
])))
```

Rubi [A] time = 0.39408, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.081

$$-\frac{F^{-\frac{n\sqrt{1-ax}}{\sqrt{ax+1}}}\left(F^{\frac{\sqrt{1-ax}}{\sqrt{ax+1}}}\right)^n \text{ExpIntegralEi}\left(\frac{n\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(F^(Sqrt[1 - a*x]/Sqrt[1 + a*x]))^n/(1 - a^2*x^2),x]
```

```
[Out] -(((F^(Sqrt[1 - a*x]/Sqrt[1 + a*x]))^n*ExpIntegralEi[(n*Sqrt[1 -
a*x]*Log[F])/Sqrt[1 + a*x]])/(a*F^((n*Sqrt[1 - a*x])/Sqrt[1 + a*x
])))
```

Rubi in Sympy [A] time = 18.8332, size = 66, normalized size = 0.86

$$-\frac{F^{-\frac{n\sqrt{-ax+1}}{\sqrt{ax+1}}}\left(F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\right)^n \text{Ei}\left(\frac{n\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((F**((-a*x+1)**(1/2)/(a*x+1)**(1/2)))**n/(-a**2*x**2+1),x)
```

```
[Out] -F**(-n*sqrt(-a*x + 1)/sqrt(a*x + 1))*(F**(sqrt(-a*x + 1)/sqrt(a*
x + 1)))**n*Ei(n*sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

Mathematica [A] time = 0.156056, size = 77, normalized size = 1.

$$-\frac{F^{-\frac{n\sqrt{1-ax}}{\sqrt{ax+1}}}\left(F^{\frac{\sqrt{1-ax}}{\sqrt{ax+1}}}\right)^n \text{ExpIntegralEi}\left(\frac{n\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(F^(Sqrt[1 - a*x]/Sqrt[1 + a*x]))^n/(1 - a^2*x^2),x]
```

```
[Out] -(((F^(Sqrt[1 - a*x]/Sqrt[1 + a*x]))^n*ExpIntegralEi[(n*Sqrt[1 -
a*x]*Log[F])/Sqrt[1 + a*x]])/(a*F^((n*Sqrt[1 - a*x])/Sqrt[1 + a*x
```

```
])))
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int \frac{1}{-a^2x^2+1} \left(F^{1\sqrt{-ax+1}\frac{1}{\sqrt{ax+1}}}\right)^n dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((F^((-a*x+1)^(1/2)/(a*x+1)^(1/2)))^n/(-a^2*x^2+1),x)

[Out] int((F^((-a*x+1)^(1/2)/(a*x+1)^(1/2)))^n/(-a^2*x^2+1),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{\left(F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\right)^n}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(-a*x + 1)/sqrt(a*x + 1)))^n/(a^2*x^2 - 1),x, algorithm="maxi

[Out] -integrate((F^(sqrt(-a*x + 1)/sqrt(a*x + 1)))^n/(a^2*x^2 - 1), x)
```

Fricas [A] time = 0.462376, size = 34, normalized size = 0.44

$$-\frac{\mathrm{Ei}\left(\frac{\sqrt{-ax+1}n\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(-a*x + 1)/sqrt(a*x + 1)))^n/(a^2*x^2 - 1),x, algorithm="fric

[Out] -Ei(sqrt(-a*x + 1)*n*log(F)/sqrt(a*x + 1))/a
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((F**((-a*x+1)**(1/2)/(a*x+1)**(1/2)))**n/(-a**2*x**2+1),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{\left(F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\right)^n}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(F^(sqrt(-a*x + 1)/sqrt(a*x + 1)))^n/(a^2*x^2 - 1),x, algorithm="giac
```

```
[Out] integrate(-(F^(sqrt(-a*x + 1)/sqrt(a*x + 1)))^n/(a^2*x^2 - 1), x)
```

3.558 $\int \frac{F^{\frac{3\sqrt{1-ax}}{\sqrt{1+ax}}}}{1-a^2x^2}\,dx$

Optimal. Leaf size=29

$$-\frac{\text{ExpIntegralEi}\left(\frac{3\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

```
[Out] -(ExpIntegralEi[(3*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi [A] time = 0.174093, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$-\frac{\text{ExpIntegralEi}\left(\frac{3\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[F^((3*Sqrt[1 - a*x])/Sqrt[1 + a*x])/(1 - a^2*x^2),x]

[Out] -(ExpIntegralEi[(3*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi in Sympy [A] time = 11.9783, size = 26, normalized size = 0.9

$$-\frac{\text{Ei}\left(\frac{3\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(3*(-a*x+1)**(1/2)/(a*x+1)**(1/2))/(-a**2*x**2+1),x)

[Out] -Ei(3*sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

Mathematica [A] time = 0.0999045, size = 29, normalized size = 1.

$$-\frac{\text{ExpIntegralEi}\left(\frac{3\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^((3*Sqrt[1 - a*x])/Sqrt[1 + a*x])/(1 - a^2*x^2),x]

[Out] -(ExpIntegralEi[(3*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int \frac{1}{-a^2x^2+1}F^{3\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(3*(-a*x+1)^(1/2)/(a*x+1)^(1/2))/(-a^2*x^2+1),x)

[Out] int(F^(3*(-a*x+1)^(1/2)/(a*x+1)^(1/2))/(-a^2*x^2+1),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{F^{\frac{3\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-F^(3*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="maxima

[Out] -integrate(F^(3*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1), x)
```

Fricas [A] time = 0.432022, size = 34, normalized size = 1.17

$$-\frac{\text{Ei}\left(\frac{3\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-F^(3*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="fricas

[Out] -Ei(3*sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

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

$$-\int \frac{F^{\frac{3\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(3*(-a*x+1)**(1/2)/(a*x+1)**(1/2))/(-a**2*x**2+1),x)

[Out] -Integral(F**(3*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a**2*x**2 - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{F^{\frac{3\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-F^(3*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="giac")

[Out] integrate(-F^(3*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1), x)
```

3.559 $\int \frac{F^{\frac{2\sqrt{1-ax}}{\sqrt{1+ax}}}}{1-a^2x^2}\,dx$

Optimal. Leaf size=29

$$-\frac{\text{ExpIntegralEi}\left(\frac{2\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

```
[Out] -(ExpIntegralEi[(2*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi [A] time = 0.175159, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$-\frac{\text{ExpIntegralEi}\left(\frac{2\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[F^((2*Sqrt[1 - a*x])/Sqrt[1 + a*x])/(1 - a^2*x^2),x]

[Out] -(ExpIntegralEi[(2*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi in Sympy [A] time = 12.0649, size = 26, normalized size = 0.9

$$-\frac{\text{Ei}\left(\frac{2\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(2*(-a*x+1)**(1/2)/(a*x+1)**(1/2))/(-a**2*x**2+1),x)

[Out] -Ei(2*sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

Mathematica [A] time = 0.0958493, size = 29, normalized size = 1.

$$-\frac{\text{ExpIntegralEi}\left(\frac{2\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^((2*Sqrt[1 - a*x])/Sqrt[1 + a*x])/(1 - a^2*x^2),x]

[Out] -(ExpIntegralEi[(2*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int \frac{1}{-a^2x^2+1}F^{2\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(2*(-a*x+1)^(1/2)/(a*x+1)^(1/2))/(-a^2*x^2+1),x)

[Out] int(F^(2*(-a*x+1)^(1/2)/(a*x+1)^(1/2))/(-a^2*x^2+1),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{F^{\frac{2\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="maxima

[Out] -integrate(F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1), x)
```

Fricas [A] time = 0.46701, size = 34, normalized size = 1.17

$$-\frac{\mathrm{Ei}\left(\frac{2\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="fricas

[Out] -Ei(2*sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

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

$$-\int \frac{F^{\frac{2\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(2*(-a*x+1)**(1/2)/(a*x+1)**(1/2))/(-a**2*x**2+1),x)

[Out] -Integral(F**(2*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a**2*x**2 - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{F^{\frac{2\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="giac")

[Out] integrate(-F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1), x)
```

3.560 $\int \frac{F^{\frac{\sqrt{1-ax}}{\sqrt{1+ax}}}}{1-a^2x^2}\,dx$

Optimal. Leaf size=28

$$-\frac{\text{ExpIntegralEi}\left(\frac{\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

```
[Out] -(ExpIntegralEi[(Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi [A] time = 0.156507, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057

$$-\frac{\text{ExpIntegralEi}\left(\frac{\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(Sqrt[1 - a*x]/Sqrt[1 + a*x])/(1 - a^2*x^2),x]
```

```
[Out] -(ExpIntegralEi[(Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi in Sympy [A] time = 11.3082, size = 24, normalized size = 0.86

$$-\frac{\text{Ei}\left(\frac{\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((-a*x+1)**(1/2)/(a*x+1)**(1/2))/(-a**2*x**2+1),x)
```

```
[Out] -Ei(sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

Mathematica [A] time = 0.0853027, size = 28, normalized size = 1.

$$-\frac{\text{ExpIntegralEi}\left(\frac{\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(Sqrt[1 - a*x]/Sqrt[1 + a*x])/(1 - a^2*x^2),x]
```

```
[Out] -(ExpIntegralEi[(Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int \frac{1}{-a^2x^2+1} F^{1\sqrt{-ax+1}\frac{1}{\sqrt{ax+1}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^((-a*x+1)^(1/2)/(a*x+1)^(1/2))/(-a^2*x^2+1),x)

[Out] int(F^((-a*x+1)^(1/2)/(a*x+1)^(1/2))/(-a^2*x^2+1),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-F^(sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="maxima")

[Out] -integrate(F^(sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1), x)
```

Fricas [A] time = 0.368601, size = 32, normalized size = 1.14

$$-\frac{\operatorname{Ei}\left(\frac{\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-F^(sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="fricas")

[Out] -Ei(sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

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

$$-\int \frac{F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**((-a*x+1)**(1/2)/(a*x+1)**(1/2))/(-a**2*x**2+1),x)

[Out] -Integral(F**(sqrt(-a*x + 1)/sqrt(a*x + 1))/(a**2*x**2 - 1), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}{a^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-F^(sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1),x, algorithm="giac")

[Out] integrate(-F^(sqrt(-a*x + 1)/sqrt(a*x + 1))/(a^2*x^2 - 1), x)
```

3.561 $\int \frac{F^{-\frac{\sqrt{1-ax}}{\sqrt{1+ax}}}}{1-a^2x^2}\,dx$

Optimal. Leaf size=29

$$-\frac{\text{ExpIntegralEi}\left(-\frac{\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

```
[Out] -(ExpIntegralEi[-((Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x])]/a)
```

Rubi [A] time = 0.173049, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$-\frac{\text{ExpIntegralEi}\left(-\frac{\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(F^(Sqrt[1 - a*x]/Sqrt[1 + a*x])*(1 - a^2*x^2)),x]

[Out] -(ExpIntegralEi[-((Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x])]/a)
```

Rubi in Sympy [A] time = 12.1013, size = 26, normalized size = 0.9

$$-\frac{\text{Ei}\left(-\frac{\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(F**((-a*x+1)**(1/2)/(a*x+1)**(1/2)))/(-a**2*x**2+1),x)

[Out] -Ei(-sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

Mathematica [A] time = 0.0946574, size = 29, normalized size = 1.

$$-\frac{\text{ExpIntegralEi}\left(-\frac{\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(F^(Sqrt[1 - a*x]/Sqrt[1 + a*x])*(1 - a^2*x^2)),x]

[Out] -(ExpIntegralEi[-((Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x])]/a)
```

Maple [F] time = 0.019, size = 0, normalized size = 0.

$$\int \frac{1}{-a^2x^2+1}\left(F^{1\sqrt{-ax+1}\frac{1}{\sqrt{ax+1}}}\right)^{-1}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(F^((-a*x+1)^(1/2)/(a*x+1)^(1/2)))/(-a^2*x^2+1),x)

[Out] int(1/(F^((-a*x+1)^(1/2)/(a*x+1)^(1/2)))/(-a^2*x^2+1),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{1}{(a^2x^2-1)F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((a^2*x^2 - 1)*F^(sqrt(-a*x + 1)/sqrt(a*x + 1))),x, algorithm="maxi

[Out] -integrate(1/((a^2*x^2 - 1)*F^(sqrt(-a*x + 1)/sqrt(a*x + 1))), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{1}{(a^2x^2-1)F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((a^2*x^2 - 1)*F^(sqrt(-a*x + 1)/sqrt(a*x + 1))),x, algorithm="frica

[Out] integral(-1/((a^2*x^2 - 1)*F^(sqrt(-a*x + 1)/sqrt(a*x + 1))), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(F**((-a*x+1)**(1/2)/(a*x+1)**(1/2)))/(-a**2*x**2+1),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{1}{(a^2x^2-1)F^{\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((a^2*x^2 - 1)*F^(sqrt(-a*x + 1)/sqrt(a*x + 1))),x, algorithm="giac

[Out] integrate(-1/((a^2*x^2 - 1)*F^(sqrt(-a*x + 1)/sqrt(a*x + 1))), x)
```

3.562 $\int \frac{F^{-\frac{2\sqrt{1-ax}}{\sqrt{1+ax}}}}{1-a^2x^2}\,dx$

Optimal. Leaf size=29

$$-\frac{\text{ExpIntegralEi}\left(-\frac{2\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

```
[Out] -(ExpIntegralEi[(-2*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi [A] time = 0.173618, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$-\frac{\text{ExpIntegralEi}\left(-\frac{2\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(F^((2*Sqrt[1 - a*x])/Sqrt[1 + a*x])*(1 - a^2*x^2)),x]

[Out] -(ExpIntegralEi[(-2*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Rubi in Sympy [A] time = 11.8642, size = 27, normalized size = 0.93

$$-\frac{\text{Ei}\left(-\frac{2\sqrt{-ax+1}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(F**(2*(-a*x+1)**(1/2)/(a*x+1)**(1/2)))/(-a**2*x**2+1),x)

[Out] -Ei(-2*sqrt(-a*x + 1)*log(F)/sqrt(a*x + 1))/a
```

Mathematica [A] time = 0.0947364, size = 29, normalized size = 1.

$$-\frac{\text{ExpIntegralEi}\left(-\frac{2\sqrt{1-ax}\log(F)}{\sqrt{ax+1}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(F^((2*Sqrt[1 - a*x])/Sqrt[1 + a*x])*(1 - a^2*x^2)),x]

[Out] -(ExpIntegralEi[(-2*Sqrt[1 - a*x]*Log[F])/Sqrt[1 + a*x]]/a)
```

Maple [F] time = 0.017, size = 0, normalized size = 0.

$$\int \frac{1}{-a^2x^2+1}\left(F^{2\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}}\right)^{-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(F^(2*(-a*x+1)^(1/2)/(a*x+1)^(1/2)))/(-a^2*x^2+1),x)
```

```
[Out] int(1/(F^(2*(-a*x+1)^(1/2)/(a*x+1)^(1/2)))/(-a^2*x^2+1),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{1}{(a^2x^2-1)F^{\frac{2\sqrt{-ax+1}}{\sqrt{ax+1}}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((a^2*x^2 - 1)*F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))),x, algorithm="ma
```

```
[Out] -integrate(1/((a^2*x^2 - 1)*F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))),
x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(-\frac{1}{(a^2x^2-1)F^{\frac{2\sqrt{-ax+1}}{\sqrt{ax+1}}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((a^2*x^2 - 1)*F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))),x, algorithm="fr
```

```
[Out] integral(-1/((a^2*x^2 - 1)*F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))), x
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(F**(2*(-a*x+1)**(1/2)/(a*x+1)**(1/2)))/(-a**2*x**2+1),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{1}{(a^2x^2-1)F^{\frac{2\sqrt{-ax+1}}{\sqrt{ax+1}}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((a^2*x^2 - 1)*F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))),x, algorithm="gi
```

```
[Out] integrate(-1/((a^2*x^2 - 1)*F^(2*sqrt(-a*x + 1)/sqrt(a*x + 1))),
x)
```

3.563 $\int a^x b^x x^2 \, dx$

Optimal. Leaf size=49

$$\frac{x^2 a^x b^x}{\log(a)+\log(b)}-\frac{2 x a^x b^x}{(\log(a)+\log(b))^2}+\frac{2 a^x b^x}{(\log(a)+\log(b))^3}$$

```
[Out] (2*a^x*b^x)/(Log[a] + Log[b])^3 - (2*a^x*b^x*x)/(Log[a] + Log[b])
^2 + (a^x*b^x*x^2)/(Log[a] + Log[b])
```

Rubi [A] time = 0.0981871, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3

$$\frac{x^2 a^x b^x}{\log(a)+\log(b)}-\frac{2 x a^x b^x}{(\log(a)+\log(b))^2}+\frac{2 a^x b^x}{(\log(a)+\log(b))^3}$$

Antiderivative was successfully verified.

```
[In] Int[a^x*b^x*x^2,x]
```

```
[Out] (2*a^x*b^x)/(Log[a] + Log[b])^3 - (2*a^x*b^x*x)/(Log[a] + Log[b])
^2 + (a^x*b^x*x^2)/(Log[a] + Log[b])
```

Rubi in Sympy [A] time = 13.2392, size = 61, normalized size = 1.24

$$\frac{x^2 e^{x(\log(a)+\log(b))}}{\log(a)+\log(b)}-\frac{2 x e^{x(\log(a)+\log(b))}}{(\log(a)+\log(b))^2}+\frac{2 e^{x(\log(a)+\log(b))}}{(\log(a)+\log(b))^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a**x*b**x*x**2,x)
```

```
[Out] x**2*exp(x*(log(a) + log(b)))/(log(a) + log(b)) - 2*x*exp(x*(log(
a) + log(b)))/(log(a) + log(b))**2 + 2*exp(x*(log(a) + log(b)))/(
log(a) + log(b))**3
```

Mathematica [A] time = 0.0232301, size = 35, normalized size = 0.71

$$\frac{a^x b^x \left(x^2(\log(a)+\log(b))^2-2x(\log(a)+\log(b))+2\right)}{(\log(a)+\log(b))^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[a^x*b^x*x^2,x]
```

```
[Out] (a^x*b^x*(2 - 2*x*(Log[a] + Log[b]) + x^2*(Log[a] + Log[b])^2))/(
Log[a] + Log[b])^3
```

Maple [A] time = 0.012, size = 69, normalized size = 1.4

$$\frac{\left((\ln(a))^2 x^2+2\ln(a)\ln(b)x^2+(\ln(b))^2 x^2-2\ln(a)x-2\ln(b)x+2\right)a^x b^x}{(\ln(a)+\ln(b))\left((\ln(a))^2+2\ln(a)\ln(b)+(\ln(b))^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(a^x*b^x*x^2,x)
```

```
[Out] (ln(a)^2*x^2+2*ln(a)*ln(b)*x^2+ln(b)^2*x^2-2*ln(a)*x-2*ln(b)*x+2)
*a^x*b^x/(ln(a)+ln(b))/(ln(a)^2+2*ln(a)*ln(b)+ln(b)^2)
```

Maxima [A] time = 0.864984, size = 90, normalized size = 1.84

$$\frac{\left(\left(\log\left(a\right)^{2} + 2\,\log\left(a\right)\log\left(b\right) + \log\left(b\right)^{2}\right)x^{2} - 2\,x(\log\left(a\right) + \log\left(b\right)) + 2\right)e^{\left(x\log\left(a\right) + x\log\left(b\right)\right)}}{\log\left(a\right)^{3} + 3\,\log\left(a\right)^{2}\log\left(b\right) + 3\,\log\left(a\right)\log\left(b\right)^{2} + \log\left(b\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*x^2,x, algorithm="maxima")
```

```
[Out] ((log(a)^2 + 2*log(a)*log(b) + log(b)^2)*x^2 - 2*x*(log(a) + log(
b)) + 2)*e^(x*log(a) + x*log(b))/(log(a)^3 + 3*log(a)^2*log(b) +
3*log(a)*log(b)^2 + log(b)^3)
```

Fricas [A] time = 0.247112, size = 96, normalized size = 1.96

$$\frac{\left(x^{2}\log\left(a\right)^{2} + x^{2}\log\left(b\right)^{2} - 2\,x\log\left(a\right) + 2\,\left(x^{2}\log\left(a\right) - x\right)\,\log\left(b\right) + 2\right)a^{x}b^{x}}{\log\left(a\right)^{3} + 3\,\log\left(a\right)^{2}\log\left(b\right) + 3\,\log\left(a\right)\log\left(b\right)^{2} + \log\left(b\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*x^2,x, algorithm="fricas")
```

```
[Out] (x^2*log(a)^2 + x^2*log(b)^2 - 2*x*log(a) + 2*(x^2*log(a) - x)*lo
g(b) + 2)*a^x*b^x/(log(a)^3 + 3*log(a)^2*log(b) + 3*log(a)*log(b)
^2 + log(b)^3)
```

Sympy [A] time = 3.5737, size = 279, normalized size = 5.69

$$\begin{cases} \frac{a^{x}b^{x}x^{2}\log\left(a\right)^{2}}{\log\left(a\right)^{3}+3\log\left(a\right)^{2}\log\left(b\right)+3\log\left(a\right)\log\left(b\right)^{2}+\log\left(b\right)^{3}} + \frac{2a^{x}b^{x}x^{2}\log\left(a\right)\log\left(b\right)}{\log\left(a\right)^{3}+3\log\left(a\right)^{2}\log\left(b\right)+3\log\left(a\right)\log\left(b\right)^{2}+\log\left(b\right)^{3}} + \frac{a^{x}b^{x}x^{2}\log\left(b\right)^{2}}{\log\left(a\right)^{3}+3\log\left(a\right)^{2}\log\left(b\right)+3\log\left(a\right)\log\left(b\right)^{2}+\log (} \\ \tilde{\infty}b^{x}\left(\frac{1}{b}\right)^{x} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x*b**x*x**2,x)
```

```
[Out] Piecewise((a**x*b**x*x**2*log(a)**2/(log(a)**3 + 3*log(a)**2*log(
b) + 3*log(a)*log(b)**2 + log(b)**3) + 2*a**x*b**x*x**2*log(a)*lo
g(b)/(log(a)**3 + 3*log(a)**2*log(b) + 3*log(a)*log(b)**2 + log(b
)**3) + a**x*b**x*x**2*log(b)**2/(log(a)**3 + 3*log(a)**2*log(b)
+ 3*log(a)*log(b)**2 + log(b)**3) - 2*a**x*b**x*x*log(a)/(log(a)*
*3 + 3*log(a)**2*log(b) + 3*log(a)*log(b)**2 + log(b)**3) - 2*a**
x*b**x*x*log(b)/(log(a)**3 + 3*log(a)**2*log(b) + 3*log(a)*log(b)
**2 + log(b)**3) + 2*a**x*b**x/(log(a)**3 + 3*log(a)**2*log(b) +
3*log(a)*log(b)**2 + log(b)**3), Ne(a, 1/b)), (zoo*b**x*(1/b)**x,
 True))
```

GIAC/XCAS [A] time = 0.263364, size = 1, normalized size = 0.02

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*x^2,x, algorithm="giac")
```

```
[Out] Done
```

3.564 $\int a^x b^x x \, dx$

Optimal. Leaf size=31

$$\frac{xa^x b^x}{\log(a) + \log(b)} - \frac{a^x b^x}{(\log(a) + \log(b))^2}$$

```
[Out] -((a^x*b^x)/(Log[a] + Log[b])^2) + (a^x*b^x*x)/(Log[a] + Log[b])
```

Rubi [A] time = 0.0465674, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.375$

$$\frac{xa^x b^x}{\log(a) + \log(b)} - \frac{a^x b^x}{(\log(a) + \log(b))^2}$$

Antiderivative was successfully verified.

```
[In] Int[a^x*b^x*x,x]
```

```
[Out] -((a^x*b^x)/(Log[a] + Log[b])^2) + (a^x*b^x*x)/(Log[a] + Log[b])
```

Rubi in Sympy [A] time = 7.27596, size = 36, normalized size = 1.16

$$\frac{xe^{x(\log(a)+\log(b))}}{\log(a) + \log(b)} - \frac{e^{x(\log(a)+\log(b))}}{(\log(a) + \log(b))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a**x*b**x*x,x)
```

```
[Out] x*exp(x*(log(a) + log(b)))/(log(a) + log(b)) - exp(x*(log(a) + lo
g(b)))/(log(a) + log(b))**2
```

Mathematica [A] time = 0.0101495, size = 26, normalized size = 0.84

$$a^x b^x \left(\frac{x}{\log(a) + \log(b)} - \frac{1}{(\log(a) + \log(b))^2} \right)$$

Antiderivative was successfully verified.

```
[In] Integrate[a^x*b^x*x,x]
```

```
[Out] a^x*b^x*(-(Log[a] + Log[b])^(-2) + x/(Log[a] + Log[b]))
```

Maple [A] time = 0.009, size = 25, normalized size = 0.8

$$\frac{(\ln(a)x + \ln(b)x - 1)a^x b^x}{(\ln(a) + \ln(b))^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a^x*b^x*x,x)
```

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

Maxima [A] time = 0.768354, size = 50, normalized size = 1.61

$$\frac{(x(\log(a) + \log(b)) - 1)e^{(x\log(a) + x\log(b))}}{\log(a)^2 + 2\log(a)\log(b) + \log(b)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*x,x, algorithm="maxima")
```

```
[Out] (x*(log(a) + log(b)) - 1)*e^(x*log(a) + x*log(b))/(log(a)^2 + 2*l
og(a)*log(b) + log(b)^2)
```

Fricas [A] time = 0.248634, size = 46, normalized size = 1.48

$$\frac{(x\log(a) + x\log(b) - 1)a^x b^x}{\log(a)^2 + 2\log(a)\log(b) + \log(b)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*x,x, algorithm="fricas")
```

```
[Out] (x*log(a) + x*log(b) - 1)*a^x*b^x/(log(a)^2 + 2*log(a)*log(b) + l
og(b)^2)
```

Sympy [A] time = 1.80403, size = 97, normalized size = 3.13

$$\begin{cases} \frac{a^x b^x x\log(a)}{\log(a)^2 + 2\log(a)\log(b) + \log(b)^2} + \frac{a^x b^x x\log(b)}{\log(a)^2 + 2\log(a)\log(b) + \log(b)^2} - \frac{a^x b^x}{\log(a)^2 + 2\log(a)\log(b) + \log(b)^2} & \text{for } a \neq \frac{1}{b} \\ \tilde{\infty} b^x \left(\frac{1}{b}\right)^x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x*b**x*x,x)
```

```
[Out] Piecewise((a**x*b**x*x*log(a)/(log(a)**2 + 2*log(a)*log(b) + log(
b)**2) + a**x*b**x*x*log(b)/(log(a)**2 + 2*log(a)*log(b) + log(b)
**2) - a**x*b**x/(log(a)**2 + 2*log(a)*log(b) + log(b)**2), Ne(a,
 1/b)), (zoo*b**x*(1/b)**x, True))
```

GIAC/XCAS [A] time = 0.238396, size = 1, normalized size = 0.03

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*x,x, algorithm="giac")
```

```
[Out] Done
```

3.565 $\int a^x b^x \, dx$

Optimal. Leaf size=14

$$\frac{a^x b^x}{\log(a) + \log(b)}$$

```
[Out] (a^x*b^x)/(Log[a] + Log[b])
```

Rubi [A] time = 0.0207525, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$

$$\frac{a^x b^x}{\log(a) + \log(b)}$$

Antiderivative was successfully verified.

```
[In] Int[a^x*b^x,x]

[Out] (a^x*b^x)/(Log[a] + Log[b])
```

Rubi in Sympy [A] time = 3.52051, size = 15, normalized size = 1.07

$$\frac{e^{x(\log(a)+\log(b))}}{\log(a) + \log(b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a**x*b**x,x)

[Out] exp(x*(log(a) + log(b)))/(log(a) + log(b))
```

Mathematica [A] time = 0.00411626, size = 14, normalized size = 1.

$$\frac{a^x b^x}{\log(a) + \log(b)}$$

Antiderivative was successfully verified.

```
[In] Integrate[a^x*b^x,x]

[Out] (a^x*b^x)/(Log[a] + Log[b])
```

Maple [A] time = 0.003, size = 15, normalized size = 1.1

$$\frac{a^x b^x}{\ln(a) + \ln(b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a^x*b^x,x)
```

```
[Out] a^x*b^x/(ln(a)+ln(b))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a^x*b^x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.243938, size = 19, normalized size = 1.36

$$\frac{a^x b^x}{\log(a) + \log(b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a^x*b^x,x, algorithm="fricas")
```

```
[Out] a^x*b^x/(log(a) + log(b))
```

Sympy [A] time = 0.954187, size = 24, normalized size = 1.71

$$\begin{cases} \frac{a^x b^x}{\log(a)+\log(b)} & \text{for } a \neq \frac{1}{b} \\ \tilde{\infty} b^x \left(\frac{1}{b}\right)^x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a**x*b**x,x)
```

```
[Out] Piecewise((a**x*b**x/(log(a) + log(b)), Ne(a, 1/b)), (zoo*b**x*(1
/b)**x, True))
```

GIAC/XCAS [A] time = 0.243168, size = 327, normalized size = 23.36

$$2\left(\frac{2\left(\ln(|a|)+\ln(|b|)\right)\cos\left(-\frac{1}{2}\pi x\text{sign}(a)-\frac{1}{2}\pi x\text{sign}(b)+\pi x\right)}{\left(2\pi-\pi\text{sign}(a)-\pi\text{sign}(b)\right)^2+4\left(\ln(|a|)+\ln(|b|)\right)^2}+\frac{\left(2\pi-\pi\text{sign}(a)-\pi\text{sign}(b)\right)\sin\left(-\frac{1}{2}\pi x\text{sign}(a)-\frac{1}{2}\pi x s\right.}{\left(2\pi-\pi\text{sign}(a)-\pi\text{sign}(b)\right)^2+4\left(\ln(|a|)+\ln(|\right.}\right.$$
$$-\frac{\left(\frac{ie^{\left(\frac{1}{2}\left(\pi(\text{sign}(a)-1)+\pi(\text{sign}(b)-1)\right)ix\right)}}{\pi i\text{sign}(a)+\pi i\text{sign}(b)-2\pi i+2\ln(|a|)+2\ln(|b|)}+\frac{ie^{\left(-\frac{1}{2}\left(\pi(\text{sign}(a)-1)+\pi(\text{sign}(b)-1)\right)ix\right)}}{\pi i\text{sign}(a)+\pi i\text{sign}(b)-2\pi i-2\ln(|a|)-2\ln(|b|)}\right)e^{\left(x(\ln(|a|)+\ln(|b|))\right)}}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a^x*b^x,x, algorithm="giac")
```

```
[Out] 2*(2*(ln(abs(a)) + ln(abs(b)))*cos(-1/2*pi*x*sign(a) - 1/2*pi*x*s
ign(b) + pi*x)/((2*pi - pi*sign(a) - pi*sign(b))^2 + 4*(ln(abs(a)
) + ln(abs(b)))^2) + (2*pi - pi*sign(a) - pi*sign(b))*sin(-1/2*pi
*x*sign(a) - 1/2*pi*x*sign(b) + pi*x)/((2*pi - pi*sign(a) - pi*si
```

```
gn(b))^2 + 4*(ln(abs(a)) + ln(abs(b)))^2))*e^(x*(ln(abs(a)) + ln(
abs(b)))) - (i*e^(1/2*(pi*(sign(a) - 1) + pi*(sign(b) - 1))*i*x)/
(pi*i*sign(a) + pi*i*sign(b) - 2*pi*i + 2*ln(abs(a)) + 2*ln(abs(b
))) + i*e^(-1/2*(pi*(sign(a) - 1) + pi*(sign(b) - 1))*i*x)/(pi*i*
sign(a) + pi*i*sign(b) - 2*pi*i - 2*ln(abs(a)) - 2*ln(abs(b))))*e
^(x*(ln(abs(a)) + ln(abs(b))))/i
```

3.566 $\int \frac{a^x b^x}{x} \, dx$

Optimal. Leaf size=8

$$\text{ExpIntegralEi}(x(\log(a)+\log(b)))$$

```
[Out] ExpIntegralEi[x*(Log[a] + Log[b])]
```

Rubi [A] time = 0.0619916, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\text{ExpIntegralEi}(x(\log(a)+\log(b)))$$

Antiderivative was successfully verified.

```
[In]  Int[(a^x*b^x)/x,x]

[Out] ExpIntegralEi[x*(Log[a] + Log[b])]
```

Rubi in Sympy [A] time = 8.75931, size = 8, normalized size = 1.

$$\text{Ei}\left(x\left(\log\left(a\right)+\log\left(b\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(a**x*b**x/x,x)

[Out] Ei(x*(log(a) + log(b)))
```

Mathematica [A] time = 0.00409738, size = 10, normalized size = 1.25

$$\text{ExpIntegralEi}(x\log(a)+x\log(b))$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^x*b^x)/x,x]

[Out] ExpIntegralEi[x*Log[a] + x*Log[b]]
```

Maple [C] time = 0.046, size = 56, normalized size = 7.

$$\ln(x)+i\pi+\ln(\ln(b))+\ln\left(1+\frac{\ln(a)}{\ln(b)}\right)-\ln\left(-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)-Ei\left(1,-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(a^x*b^x/x,x)

[Out] ln(x)+I*Pi+ln(ln(b))+ln(1+ln(a)/ln(b))-ln(-x*ln(b)*(1+ln(a)/ln(b)
))-Ei(1,-x*ln(b)*(1+ln(a)/ln(b)))
```

Maxima [A] time = 0.832641, size = 11, normalized size = 1.38

$$\mathrm{Ei}\left(x(\log\left(a\right)+\log\left(b\right))\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x,x, algorithm="maxima")
```

```
[Out] Ei(x*(log(a) + log(b)))
```

Fricas [A] time = 0.244213, size = 14, normalized size = 1.75

$$\mathrm{Ei}\left(x\log\left(a\right)+x\log\left(b\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x,x, algorithm="fricas")
```

```
[Out] Ei(x*log(a) + x*log(b))
```

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

$$\int\frac{a^xb^x}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x*b**x/x,x)
```

```
[Out] Integral(a**x*b**x/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a^xb^x}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x,x, algorithm="giac")
```

```
[Out] integrate(a^x*b^x/x, x)
```

3.567 $\int \frac{a^x b^x}{x^2} \, dx$

Optimal. Leaf size=26

$$(\log(a)+\log(b))\text{ExpIntegralEi}(x(\log(a)+\log(b)))-\frac{a^x b^x}{x}$$

```
[Out] -((a^x*b^x)/x) + ExpIntegralEi[x*(Log[a] + Log[b])]*(Log[a] + Log
[b])
```

Rubi [A] time = 0.0952695, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3

$$(\log(a)+\log(b))\text{ExpIntegralEi}(x(\log(a)+\log(b)))-\frac{a^x b^x}{x}$$

Antiderivative was successfully verified.

```
[In] Int[(a^x*b^x)/x^2,x]
```

```
[Out] -((a^x*b^x)/x) + ExpIntegralEi[x*(Log[a] + Log[b])]*(Log[a] + Log
[b])
```

Rubi in Sympy [A] time = 10.9402, size = 27, normalized size = 1.04

$$(\log(a)+\log(b))\operatorname{Ei}(x(\log(a)+\log(b)))-\frac{e^{x(\log(a)+\log(b))}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a**x*b**x/x**2,x)
```

```
[Out] (log(a) + log(b))*Ei(x*(log(a) + log(b))) - exp(x*(log(a) + log(b
)))/x
```

Mathematica [A] time = 0.0446168, size = 0, normalized size = 0.

$$\int \frac{a^x b^x}{x^2} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a^x*b^x)/x^2,x]
```

```
[Out] Integrate[(a^x*b^x)/x^2, x]
```

Maple [C] time = 0.046, size = 160, normalized size = 6.2

$$-\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\left(\frac{1}{\ln(b)x}\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-1}+1-\ln(x)-i\pi-\ln(\ln(b))\right.$$
$$-\ln\left(1+\frac{\ln(a)}{\ln(b)}\right)-\frac{1}{2\ln(b)x}\left(2x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)+2\right)\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-1}$$
$$\left.+\frac{1}{\ln(b)x}e^{x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)}\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-1}+\ln\left(-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)+Ei\left(1,-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(a^x*b^x/x^2,x)
```

```
[Out] -ln(b)*(1+ln(a)/ln(b))*(1/x/ln(b)/(1+ln(a)/ln(b))+1-ln(x)-I*Pi-ln
(ln(b))-ln(1+ln(a)/ln(b))-1/2/x/ln(b)/(1+ln(a)/ln(b))*(2*x*ln(b)*
(1+ln(a)/ln(b))+2)+1/x/ln(b)/(1+ln(a)/ln(b))*exp(x*ln(b)*(1+ln(a)
/ln(b)))+ln(-x*ln(b)*(1+ln(a)/ln(b)))+Ei(1,-x*ln(b)*(1+ln(a)/ln(b
))))
```

Maxima [A] time = 0.818246, size = 22, normalized size = 0.85

$$(\log(a) + \log(b))(-1, -x(\log(a) + \log(b)))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x^2,x, algorithm="maxima")
```

```
[Out] (log(a) + log(b))*gamma(-1, -x*(log(a) + log(b)))
```

Fricas [A] time = 0.247043, size = 46, normalized size = 1.77

$$-\frac{a^x b^x - (x\log(a) + x\log(b))\mathrm{Ei}(x\log(a) + x\log(b))}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x^2,x, algorithm="fricas")
```

```
[Out] -(a^x*b^x - (x*log(a) + x*log(b))*Ei(x*log(a) + x*log(b)))/x
```

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

$$\int \frac{a^x b^x}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x*b**x/x**2,x)
```

```
[Out] Integral(a**x*b**x/x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a^x b^x}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x^2,x, algorithm="giac")
```

```
[Out] integrate(a^x*b^x/x^2, x)
```

3.568 $\int \frac{a^x b^x}{x^3} dx$

Optimal. Leaf size=51

$$-\frac{a^x b^x}{2x^2}-\frac{a^x b^x(\log(a)+\log(b))}{2x}+\frac{1}{2}(\log(a)+\log(b))^2\text{ExpIntegralEi}(x(\log(a)+\log(b)))$$

```
[Out] -(a^x*b^x)/(2*x^2) - (a^x*b^x*(Log[a] + Log[b]))/(2*x) + (ExpInte
gralEi[x*(Log[a] + Log[b])]*(Log[a] + Log[b])^2)/2
```

Rubi [A] time = 0.13018, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.3

$$-\frac{a^x b^x}{2x^2}-\frac{a^x b^x(\log(a)+\log(b))}{2x}+\frac{1}{2}(\log(a)+\log(b))^2\text{ExpIntegralEi}(x(\log(a)+\log(b)))$$

Antiderivative was successfully verified.

```
[In] Int[(a^x*b^x)/x^3,x]
```

```
[Out] -(a^x*b^x)/(2*x^2) - (a^x*b^x*(Log[a] + Log[b]))/(2*x) + (ExpInte
gralEi[x*(Log[a] + Log[b])]*(Log[a] + Log[b])^2)/2
```

Rubi in Sympy [A] time = 14.0496, size = 56, normalized size = 1.1

$$\frac{(\log(a)+\log(b))^2\operatorname{Ei}(x(\log(a)+\log(b)))}{2}-\frac{\left(\frac{\log(a)}{2}+\frac{\log(b)}{2}\right)e^{x(\log(a)+\log(b))}}{x}-\frac{e^{x(\log(a)+\log(b))}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a**x*b**x/x**3,x)
```

```
[Out] (log(a) + log(b))**2*Ei(x*(log(a) + log(b)))/2 - (log(a)/2 + log(
b)/2)*exp(x*(log(a) + log(b)))/x - exp(x*(log(a) + log(b)))/(2*x*
*2)
```

Mathematica [A] time = 0.0427261, size = 0, normalized size = 0.

$$\int \frac{a^x b^x}{x^3} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a^x*b^x)/x^3,x]
```

```
[Out] Integrate[(a^x*b^x)/x^3, x]
```

Maple [C] time = 0.056, size = 225, normalized size = 4.4

$$(\ln(b))^2\left(1+\frac{\ln(a)}{\ln(b)}\right)^2\left(-\frac{1}{2(\ln(b))^2x^2}\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-2}-\frac{1}{\ln(b)x}\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-1}-\frac{3}{4}+\frac{\ln(x)}{2}+\frac{i}{2}\pi+\frac{\ln(\ln(b))}{2}+\frac{1}{2}\ln\left(1+\frac{\ln(a)}{\ln(b)}\right)+\frac{1}{12(\ln(b))^2x^2}\left(9x^2(\ln(b))^2\left(1+\frac{\ln(a)}{\ln(b)}\right)^2+12x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)+6\right)\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-2}-\frac{1}{6(\ln(b))^2x^2}\left(3x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)+3\right)e^{x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)}\left(1+\frac{\ln(a)}{\ln(b)}\right)^{-2}-\frac{1}{2}\ln\left(-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)-\frac{1}{2}Ei\left(1,-x\ln(b)\left(1+\frac{\ln(a)}{\ln(b)}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(a^x*b^x/x^3,x)
```

```
[Out] ln(b)^2*(1+ln(a)/ln(b))^2*(-1/2/x^2/ln(b)^2/(1+ln(a)/ln(b))^2-1/x
/ln(b)/(1+ln(a)/ln(b))-3/4+1/2*ln(x)+1/2*I*Pi+1/2*ln(ln(b))+1/2*l
n(1+ln(a)/ln(b))+1/12/x^2/ln(b)^2/(1+ln(a)/ln(b))^2*(9*x^2*ln(b)^
2*(1+ln(a)/ln(b))^2+12*x*ln(b)*(1+ln(a)/ln(b))+6)-1/6/x^2/ln(b)^2
/(1+ln(a)/ln(b))^2*(3*x*ln(b)*(1+ln(a)/ln(b))+3)*exp(x*ln(b)*(1+l
n(a)/ln(b)))-1/2*ln(-x*ln(b)*(1+ln(a)/ln(b)))-1/2*Ei(1,-x*ln(b)*(
1+ln(a)/ln(b))))
```

Maxima [A] time = 0.799225, size = 26, normalized size = 0.51

$$-(\log(a)+\log(b))^2(-2,-x(\log(a)+\log(b)))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(a^x*b^x/x^3,x, algorithm="maxima")
```

```
[Out] -(log(a) + log(b))^2*gamma(-2, -x*(log(a) + log(b)))
```

Fricas [A] time = 0.260894, size = 82, normalized size = 1.61

$$-\frac{(x\log(a)+x\log(b)+1)a^xb^x-\left(x^2\log(a)^2+2x^2\log(a)\log(b)+x^2\log(b)^2\right)\mathrm{Ei}(x\log(a)+x\log(b))}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(a^x*b^x/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*((x*log(a) + x*log(b) + 1)*a^x*b^x - (x^2*log(a)^2 + 2*x^2*l
og(a)*log(b) + x^2*log(b)^2)*Ei(x*log(a) + x*log(b)))/x^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a^xb^x}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x*b**x/x**3,x)
```

```
[Out] Integral(a**x*b**x/x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a^x b^x}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x/x^3,x, algorithm="giac")
```

```
[Out] integrate(a^x*b^x/x^3, x)
```

3.569 $\int a^x b^x c^x \, dx$

Optimal. Leaf size=19

$$\frac{a^x b^x c^x}{\log(a) + \log(b) + \log(c)}$$

```
[Out] (a^x*b^x*c^x)/(Log[a] + Log[b] + Log[c])
```

Rubi [A] time = 0.0627915, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{a^x b^x c^x}{\log(a) + \log(b) + \log(c)}$$

Antiderivative was successfully verified.

```
[In] Int[a^x*b^x*c^x,x]

[Out] (a^x*b^x*c^x)/(Log[a] + Log[b] + Log[c])
```

Rubi in Sympy [A] time = 9.47671, size = 22, normalized size = 1.16

$$\frac{e^{x(\log(a)+\log(b)+\log(c))}}{\log(a) + \log(b) + \log(c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a**x*b**x*c**x,x)

[Out] exp(x*(log(a) + log(b) + log(c)))/(log(a) + log(b) + log(c))
```

Mathematica [A] time = 0.00793654, size = 19, normalized size = 1.

$$\frac{a^x b^x c^x}{\log(a) + \log(b) + \log(c)}$$

Antiderivative was successfully verified.

```
[In] Integrate[a^x*b^x*c^x,x]

[Out] (a^x*b^x*c^x)/(Log[a] + Log[b] + Log[c])
```

Maple [A] time = 0.007, size = 20, normalized size = 1.1

$$\frac{a^x b^x c^x}{\ln(a) + \ln(b) + \ln(c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a^x*b^x*c^x,x)
```

```
[Out] a^x*b^x*c^x/(ln(a)+ln(b)+ln(c))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*c^x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.248315, size = 26, normalized size = 1.37

$$\frac{a^x b^x c^x}{\log(a) + \log(b) + \log(c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*c^x,x, algorithm="fricas")
```

```
[Out] a^x*b^x*c^x/(log(a) + log(b) + log(c))
```

Sympy [A] time = 3.82703, size = 41, normalized size = 2.16

$$\begin{cases} \frac{a^x b^x c^x}{\log(a)+\log(b)+\log(c)} & \text{for } a \neq \frac{1}{bc} \\ \tilde{\infty} b^x c^x \left(\frac{1}{b}\right)^x \left(\frac{1}{c}\right)^x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x*b**x*c**x,x)
```

```
[Out] Piecewise((a**x*b**x*c**x/(log(a) + log(b) + log(c)), Ne(a, 1/(b*
c))), (zoo*b**x*c**x*(1/b)**x*(1/c)**x, True))
```

GIAC/XCAS [A] time = 0.254901, size = 429, normalized size = 22.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*b^x*c^x,x, algorithm="giac")
```

```
[Out] 2*(2*(ln(abs(a)) + ln(abs(b)) + ln(abs(c)))*cos(-1/2*pi*x*sign(a)
 - 1/2*pi*x*sign(b) - 1/2*pi*x*sign(c) + 3/2*pi*x)/((3*pi - pi*si
gn(a) - pi*sign(b) - pi*sign(c))^2 + 4*(ln(abs(a)) + ln(abs(b)) +
 ln(abs(c)))^2) + (3*pi - pi*sign(a) - pi*sign(b) - pi*sign(c))*s
in(-1/2*pi*x*sign(a) - 1/2*pi*x*sign(b) - 1/2*pi*x*sign(c) + 3/2*
pi*x)/((3*pi - pi*sign(a) - pi*sign(b) - pi*sign(c))^2 + 4*(ln(ab
s(a)) + ln(abs(b)) + ln(abs(c)))^2))*e^(x*(ln(abs(a)) + ln(abs(b)
) + ln(abs(c)))) - (i*e^(1/2*(pi*(sign(a) - 1) + pi*(sign(b) - 1)
 + pi*(sign(c) - 1))*i*x)/(pi*i*sign(a) + pi*i*sign(b) + pi*i*sig
```

```
n(c) - 3*pi*i + 2*ln(abs(a)) + 2*ln(abs(b)) + 2*ln(abs(c))) + i*e
^(-1/2*(pi*(sign(a) - 1) + pi*(sign(b) - 1) + pi*(sign(c) - 1))*i
*x)/(pi*i*sign(a) + pi*i*sign(b) + pi*i*sign(c) - 3*pi*i - 2*ln(a
bs(a)) - 2*ln(abs(b)) - 2*ln(abs(c))))*e^(x*(ln(abs(a)) + ln(abs(
b)) + ln(abs(c))))/i
```

3.570 $\int a^x b^{-x} \, dx$

Optimal. Leaf size=18

$$\frac{a^x b^{-x}}{\log(a) - \log(b)}$$

```
[Out] a^x/(b^x*(Log[a] - Log[b]))
```

Rubi [A] time = 0.0327496, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$

$$\frac{a^x b^{-x}}{\log(a) - \log(b)}$$

Antiderivative was successfully verified.

```
[In]  Int[a^x/b^x,x]

[Out] a^x/(b^x*(Log[a] - Log[b]))
```

Rubi in Sympy [A] time = 3.71371, size = 15, normalized size = 0.83

$$\frac{e^{x(\log(a) - \log(b))}}{\log(a) - \log(b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(a**x/(b**x),x)

[Out] exp(x*(log(a) - log(b)))/(log(a) - log(b))
```

Mathematica [A] time = 0.00566178, size = 18, normalized size = 1.

$$\frac{a^x b^{-x}}{\log(a) - \log(b)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[a^x/b^x,x]

[Out] a^x/(b^x*(Log[a] - Log[b]))
```

Maple [A] time = 0.007, size = 19, normalized size = 1.1

$$\frac{a^x}{b^x (\ln(a) - \ln(b))}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(a^x/(b^x),x)
```

```
[Out] a^x/(b^x)/(ln(a)-ln(b))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x/b^x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.248968, size = 24, normalized size = 1.33

$$\frac{a^x}{b^x(\log(a) - \log(b))}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x/b^x,x, algorithm="fricas")
```

```
[Out] a^x/(b^x*(log(a) - log(b)))
```

Sympy [A] time = 0.967823, size = 17, normalized size = 0.94

$$\begin{cases} \frac{a^x}{b^x\log(a) - b^x\log(b)} & \text{for } a \neq b \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a**x/(b**x),x)
```

```
[Out] Piecewise((a**x/(b**x*log(a) - b**x*log(b)), Ne(a, b)), (x, True)
)
```

GIAC/XCAS [A] time = 0.241055, size = 312, normalized size = 17.33

$$2\left(\frac{2(\ln(|a|) - \ln(|b|))\cos\left(-\frac{1}{2}\pi x\text{sign}(a) + \frac{1}{2}\pi x\text{sign}(b)\right)}{(\pi\text{sign}(a) - \pi\text{sign}(b))^2 + 4(\ln(|a|) - \ln(|b|))^2} - \frac{(\pi\text{sign}(a) - \pi\text{sign}(b))\sin\left(-\frac{1}{2}\pi x\text{sign}(a) + \frac{1}{2}\pi x\text{sign}(b)\right)}{(\pi\text{sign}(a) - \pi\text{sign}(b))^2 + 4(\ln(|a|) - \ln(|b|))^2}\right)e^{(
- \frac{\left(\frac{ie^{\left(\frac{1}{2}(\pi(\text{sign}(a)-1)-\pi(\text{sign}(b)-1))ix\right)}}{\pi i\text{sign}(a)-\pi i\text{sign}(b)+2\ln(|a|)-2\ln(|b|)} + \frac{ie^{\left(-\frac{1}{2}(\pi(\text{sign}(a)-1)-\pi(\text{sign}(b)-1))ix\right)}}{\pi i\text{sign}(a)-\pi i\text{sign}(b)-2\ln(|a|)+2\ln(|b|)}\right)e^{(x(\ln(|a|)-\ln(|b|)))}}{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x/b^x,x, algorithm="giac")
```

```
[Out] 2*(2*(ln(abs(a)) - ln(abs(b)))*cos(-1/2*pi*x*sign(a) + 1/2*pi*x*s
ign(b))/((pi*sign(a) - pi*sign(b))^2 + 4*(ln(abs(a)) - ln(abs(b))
)^2) - (pi*sign(a) - pi*sign(b))*sin(-1/2*pi*x*sign(a) + 1/2*pi*x
*sign(b))/((pi*sign(a) - pi*sign(b))^2 + 4*(ln(abs(a)) - ln(abs(b
```

```
)))^2))*e^(x*(ln(abs(a)) - ln(abs(b)))) - (i*e^(1/2*(pi*(sign(a)
- 1) - pi*(sign(b) - 1))*i*x)/(pi*i*sign(a) - pi*i*sign(b) + 2*ln
(abs(a)) - 2*ln(abs(b))) + i*e^(-1/2*(pi*(sign(a) - 1) - pi*(sign
(b) - 1))*i*x)/(pi*i*sign(a) - pi*i*sign(b) - 2*ln(abs(a)) + 2*ln
(abs(b))))*e^(x*(ln(abs(a)) - ln(abs(b))))/i
```

3.571 $\int a^x b^{-x} x^2 \, dx$

Optimal. Leaf size=61

$$\frac{x^2 a^x b^{-x}}{\log(a)-\log(b)}-\frac{2x a^x b^{-x}}{(\log(a)-\log(b))^2}+\frac{2a^x b^{-x}}{(\log(a)-\log(b))^3}$$

```
[Out] (2*a^x)/(b^x*(Log[a] - Log[b])^3) - (2*a^x*x)/(b^x*(Log[a] - Log[
b])^2) + (a^x*x^2)/(b^x*(Log[a] - Log[b]))
```

Rubi [A] time = 0.104527, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{x^2 a^x b^{-x}}{\log(a)-\log(b)}-\frac{2x a^x b^{-x}}{(\log(a)-\log(b))^2}+\frac{2a^x b^{-x}}{(\log(a)-\log(b))^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a^x*x^2)/b^x,x]
```

```
[Out] (2*a^x)/(b^x*(Log[a] - Log[b])^3) - (2*a^x*x)/(b^x*(Log[a] - Log[
b])^2) + (a^x*x^2)/(b^x*(Log[a] - Log[b]))
```

Rubi in Sympy [A] time = 14.3118, size = 61, normalized size = 1.

$$\frac{x^2 e^{x(\log(a)-\log(b))}}{\log(a)-\log(b)}-\frac{2x e^{x(\log(a)-\log(b))}}{(\log(a)-\log(b))^2}+\frac{2e^{x(\log(a)-\log(b))}}{(\log(a)-\log(b))^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(a**x*x**2/(b**x),x)
```

```
[Out] x**2*exp(x*(log(a) - log(b)))/(log(a) - log(b)) - 2*x*exp(x*(log(
a) - log(b)))/(log(a) - log(b))**2 + 2*exp(x*(log(a) - log(b)))/(
log(a) - log(b))**3
```

Mathematica [A] time = 0.0246531, size = 43, normalized size = 0.7

$$\frac{a^x b^{-x}\left(x^2(\log(a)-\log(b))^2-2x(\log(a)-\log(b))+2\right)}{(\log(a)-\log(b))^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^x*x^2)/b^x,x]
```

```
[Out] (a^x*(2 - 2*x*(Log[a] - Log[b]) + x^2*(Log[a] - Log[b])^2))/(b^x*
(Log[a] - Log[b])^3)
```

Maple [A] time = 0.01, size = 73, normalized size = 1.2

$$\frac{\left((\ln(a))^2 x^2-2\ln(a)\ln(b)x^2+(\ln(b))^2 x^2-2\ln(a)x+2\ln(b)x+2\right)a^x}{(\ln(a)-\ln(b))\left((\ln(a))^2-2\ln(a)\ln(b)+(\ln(b))^2\right)b^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(a^x*x^2/(b^x),x)
```

```
[Out] (ln(a)^2*x^2-2*ln(a)*ln(b)*x^2+ln(b)^2*x^2-2*ln(a)*x+2*ln(b)*x+2)
*a^x/(ln(a)-ln(b))/(ln(a)^2-2*ln(a)*ln(b)+ln(b)^2)/(b^x)
```

Maxima [A] time = 0.778253, size = 97, normalized size = 1.59

$$\frac{\left(\left(\log\left(a\right)^{2} - 2\,\log\left(a\right)\log\left(b\right) + \log\left(b\right)^{2}\right)x^{2} - 2\,x(\log\left(a\right) - \log\left(b\right)) + 2\right)e^{\left(x\log(a) - x\log(b)\right)}}{\log\left(a\right)^{3} - 3\,\log\left(a\right)^{2}\log\left(b\right) + 3\,\log\left(a\right)\log\left(b\right)^{2} - \log\left(b\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(a^x*x^2/b^x,x, algorithm="maxima")
```

```
[Out] ((log(a)^2 - 2*log(a)*log(b) + log(b)^2)*x^2 - 2*x*(log(a) - log(
b)) + 2)*e^(x*log(a) - x*log(b))/(log(a)^3 - 3*log(a)^2*log(b) +
3*log(a)*log(b)^2 - log(b)^3)
```

Fricas [A] time = 0.243849, size = 101, normalized size = 1.66

$$\frac{\left(x^{2}\log\left(a\right)^{2} + x^{2}\log\left(b\right)^{2} - 2\,x\log\left(a\right) - 2\,\left(x^{2}\log\left(a\right) - x\right)\,\log\left(b\right) + 2\right)a^{x}}{\left(\log\left(a\right)^{3} - 3\,\log\left(a\right)^{2}\log\left(b\right) + 3\,\log\left(a\right)\log\left(b\right)^{2} - \log\left(b\right)^{3}\right)b^{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(a^x*x^2/b^x,x, algorithm="fricas")
```

```
[Out] (x^2*log(a)^2 + x^2*log(b)^2 - 2*x*log(a) - 2*(x^2*log(a) - x)*lo
g(b) + 2)*a^x/((log(a)^3 - 3*log(a)^2*log(b) + 3*log(a)*log(b)^2
- log(b)^3)*b^x)
```

Sympy [A] time = 2.37812, size = 333, normalized size = 5.46

$$\begin{cases} \frac{a^{x}x^{2}\log\left(a\right)^{2}}{b^{x}\log\left(a\right)^{3} - 3b^{x}\log\left(a\right)^{2}\log\left(b\right) + 3b^{x}\log\left(a\right)\log\left(b\right)^{2} - b^{x}\log\left(b\right)^{3}} - \frac{2a^{x}x^{2}\log\left(a\right)\log\left(b\right)}{b^{x}\log\left(a\right)^{3} - 3b^{x}\log\left(a\right)^{2}\log\left(b\right) + 3b^{x}\log\left(a\right)\log\left(b\right)^{2} - b^{x}\log\left(b\right)^{3}} + \frac{\cdots}{b^{x}\log\left(a\right)^{3} - 3b^{x}\log\left(\cdots\right.} \\ \frac{x^{3}}{3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(a**x*x**2/(b**x),x)
```

```
[Out] Piecewise((a**x*x**2*log(a)**2/(b**x*log(a)**3 - 3*b**x*log(a)**2
*log(b) + 3*b**x*log(a)*log(b)**2 - b**x*log(b)**3) - 2*a**x*x**2
*log(a)*log(b)/(b**x*log(a)**3 - 3*b**x*log(a)**2*log(b) + 3*b**x
*log(a)*log(b)**2 - b**x*log(b)**3) + a**x*x**2*log(b)**2/(b**x*l
og(a)**3 - 3*b**x*log(a)**2*log(b) + 3*b**x*log(a)*log(b)**2 - b*
*x*log(b)**3) - 2*a**x*x*log(a)/(b**x*log(a)**3 - 3*b**x*log(a)**
2*log(b) + 3*b**x*log(a)*log(b)**2 - b**x*log(b)**3) + 2*a**x*x*l
og(b)/(b**x*log(a)**3 - 3*b**x*log(a)**2*log(b) + 3*b**x*log(a)*l
og(b)**2 - b**x*log(b)**3) + 2*a**x/(b**x*log(a)**3 - 3*b**x*log(
a)**2*log(b) + 3*b**x*log(a)*log(b)**2 - b**x*log(b)**3), Ne(a, b
)), (x**3/3, True))
```

GIAC/XCAS [A] time = 0.26148, size = 1, normalized size = 0.02

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a^x*x^2/b^x,x, algorithm="giac")
```

```
[Out] Done
```

3.572 $\int \frac{\left(d+e e^{h+ix}\right)(f+gx)^3}{a+be^{h+ix}+ce^{2h+2ix}}\,dx$

Optimal. Leaf size=770

$$\frac{6g^2(f+gx)\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^3\left(b-\sqrt{b^2-4ac}\right)}+\frac{6g^2(f+gx)\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^3\left(\sqrt{b^2-4ac}+b\right)}-\frac{3g(f+gx)^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^2\left(b-\sqrt{b^2-4ac}\right)}-\frac{3g(f+gx)^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^2\left(\sqrt{b^2-4ac}+b\right)}-\frac{6g^3\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(4,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^4\left(b-\sqrt{b^2-4ac}\right)}-\frac{6g^3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(4,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^4\left(\sqrt{b^2-4ac}+b\right)}-\frac{(f+gx)^3\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\log\left(\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}+1\right)}{i\left(b-\sqrt{b^2-4ac}\right)}-\frac{(f+gx)^3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}+1\right)}{i\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^4\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)}{4g\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^4\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)}{4g\left(b-\sqrt{b^2-4ac}\right)}$$

```
[Out] ((e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*x)^4)/(4*(b + Sqrt[
b^2 - 4*a*c])*g) + ((e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*
x)^4)/(4*(b - Sqrt[b^2 - 4*a*c])*g) - ((e + (2*c*d - b*e)/Sqrt[b^
2 - 4*a*c])*(f + g*x)^3*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 -
 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i) - ((e - (2*c*d - b*e)/Sqrt
[b^2 - 4*a*c])*(f + g*x)^3*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^
2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i) - (3*(e + (2*c*d - b*e)
/Sqrt[b^2 - 4*a*c])*g*(f + g*x)^2*PolyLog[2, (-2*c*E^(h + i*x))/(
b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i^2) - (3*(e -
(2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g*(f + g*x)^2*PolyLog[2, (-2*c*E
^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i^
2) + (6*(e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*(f + g*x)*PolyL
og[3, (-2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2
 - 4*a*c])*i^3) + (6*(e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*(f
 + g*x)*PolyLog[3, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/(
(b + Sqrt[b^2 - 4*a*c])*i^3) - (6*(e + (2*c*d - b*e)/Sqrt[b^2 - 4
*a*c])*g^3*PolyLog[4, (-2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])]
)/((b - Sqrt[b^2 - 4*a*c])*i^4) - (6*(e - (2*c*d - b*e)/Sqrt[b^2
- 4*a*c])*g^3*PolyLog[4, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c
])])/((b + Sqrt[b^2 - 4*a*c])*i^4)
```

Rubi [A] time = 2.4576, antiderivative size = 770, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.159$

$$\frac{6g^2(f+gx)\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^3\left(b-\sqrt{b^2-4ac}\right)}+\frac{6g^2(f+gx)\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^3\left(\sqrt{b^2-4ac}+b\right)}-\frac{3g(f+gx)^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^2\left(b-\sqrt{b^2-4ac}\right)}-\frac{3g(f+gx)^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^2\left(\sqrt{b^2-4ac}+b\right)}-\frac{6g^3\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(4,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^4\left(b-\sqrt{b^2-4ac}\right)}-\frac{6g^3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(4,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^4\left(\sqrt{b^2-4ac}+b\right)}-\frac{(f+gx)^3\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\log\left(\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}+1\right)}{i\left(b-\sqrt{b^2-4ac}\right)}-\frac{(f+gx)^3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}+1\right)}{i\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^4\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)}{4g\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^4\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)}{4g\left(b-\sqrt{b^2-4ac}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*E^(h + i*x))*(f + g*x)^3)/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x)),x]
```

```
[Out] ((e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*x)^4)/(4*(b + Sqrt[
b^2 - 4*a*c])*g) + ((e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*
x)^4)/(4*(b - Sqrt[b^2 - 4*a*c])*g) - ((e + (2*c*d - b*e)/Sqrt[b^
2 - 4*a*c])*(f + g*x)^3*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 -
 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i) - ((e - (2*c*d - b*e)/Sqrt
[b^2 - 4*a*c])*(f + g*x)^3*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^
2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i) - (3*(e + (2*c*d - b*e)
/Sqrt[b^2 - 4*a*c])*g*(f + g*x)^2*PolyLog[2, (-2*c*E^(h + i*x))/(
b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i^2) - (3*(e -
(2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g*(f + g*x)^2*PolyLog[2, (-2*c*E
^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i^
2) + (6*(e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*(f + g*x)*PolyL
og[3, (-2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2
 - 4*a*c])*i^3) + (6*(e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*(f
 + g*x)*PolyLog[3, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/(
(b + Sqrt[b^2 - 4*a*c])*i^3) - (6*(e + (2*c*d - b*e)/Sqrt[b^2 - 4
*a*c])*g^3*PolyLog[4, (-2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])]
)/((b - Sqrt[b^2 - 4*a*c])*i^4) - (6*(e - (2*c*d - b*e)/Sqrt[b^2
- 4*a*c])*g^3*PolyLog[4, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c
])])/((b + Sqrt[b^2 - 4*a*c])*i^4)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d+e*exp(i*x+h))*(g*x+f)**3/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x
```

```
[Out] Timed out
```

Mathematica [B] time = 6.47288, size = 2441, normalized size = 3.17

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + e*E^(h + i*x))*(f + g*x)^3)/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))
```

```
[Out] -(-4*Sqrt[-(b^2 - 4*a*c)^2]*d*f^3*i^4*x - 6*Sqrt[-(b^2 - 4*a*c)^2
]*d*f^2*g*i^4*x^2 - 4*Sqrt[-(b^2 - 4*a*c)^2]*d*f*g^2*i^4*x^3 - Sq
rt[-(b^2 - 4*a*c)^2]*d*g^3*i^4*x^4 + 4*b*Sqrt[b^2 - 4*a*c]*d*f^3*
i^3*ArcTan[(b + 2*c*E^(h + i*x))/Sqrt[-b^2 + 4*a*c]] - 8*a*Sqrt[b
^2 - 4*a*c]*e*f^3*i^3*ArcTan[(b + 2*c*E^(h + i*x))/Sqrt[-b^2 + 4*
a*c]] + 6*Sqrt[-(b^2 - 4*a*c)^2]*d*f^2*g*i^3*x*Log[1 + (2*c*E^(h
+ i*x))/(b - Sqrt[b^2 - 4*a*c])] + 6*b*Sqrt[-b^2 + 4*a*c]*d*f^2*g
*i^3*x*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] - 12*a*
Sqrt[-b^2 + 4*a*c]*e*f^2*g*i^3*x*Log[1 + (2*c*E^(h + i*x))/(b - S
qrt[b^2 - 4*a*c])] + 6*Sqrt[-(b^2 - 4*a*c)^2]*d*f*g^2*i^3*x^2*Log
[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + 6*b*Sqrt[-b^2 +
 4*a*c]*d*f*g^2*i^3*x^2*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 -
 4*a*c])] - 12*a*Sqrt[-b^2 + 4*a*c]*e*f*g^2*i^3*x^2*Log[1 + (2*c*
E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + 2*Sqrt[-(b^2 - 4*a*c)^2]*
d*g^3*i^3*x^3*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])]
+ 2*b*Sqrt[-b^2 + 4*a*c]*d*g^3*i^3*x^3*Log[1 + (2*c*E^(h + i*x))/
(b - Sqrt[b^2 - 4*a*c])] - 4*a*Sqrt[-b^2 + 4*a*c]*e*g^3*i^3*x^3*L
og[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + 6*Sqrt[-(b^2
- 4*a*c)^2]*d*f^2*g*i^3*x*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2
 - 4*a*c])] - 6*b*Sqrt[-b^2 + 4*a*c]*d*f^2*g*i^3*x*Log[1 + (2*c*E
^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] + 12*a*Sqrt[-b^2 + 4*a*c]*e*
f^2*g*i^3*x*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] +
6*Sqrt[-(b^2 - 4*a*c)^2]*d*f*g^2*i^3*x^2*Log[1 + (2*c*E^(h + i*x)
)/(b + Sqrt[b^2 - 4*a*c])] - 6*b*Sqrt[-b^2 + 4*a*c]*d*f*g^2*i^3*x
^2*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] + 12*a*Sqrt
[-b^2 + 4*a*c]*e*f*g^2*i^3*x^2*Log[1 + (2*c*E^(h + i*x))/(b + Sqr
t[b^2 - 4*a*c])] + 2*Sqrt[-(b^2 - 4*a*c)^2]*d*g^3*i^3*x^3*Log[1 +
 (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] - 2*b*Sqrt[-b^2 + 4*a
*c]*d*g^3*i^3*x^3*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c
])] + 4*a*Sqrt[-b^2 + 4*a*c]*e*g^3*i^3*x^3*Log[1 + (2*c*E^(h + i*
x))/(b + Sqrt[b^2 - 4*a*c])] + 2*Sqrt[-(b^2 - 4*a*c)^2]*d*f^3*i^3
*Log[a + E^(h + i*x)*(b + c*E^(h + i*x))] + 6*(Sqrt[-(b^2 - 4*a*c
)^2]*d + b*Sqrt[-b^2 + 4*a*c]*d - 2*a*Sqrt[-b^2 + 4*a*c]*e)*g*i^2
*(f + g*x)^2*PolyLog[2, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c]
)] + 6*(Sqrt[-(b^2 - 4*a*c)^2]*d - b*Sqrt[-b^2 + 4*a*c]*d + 2*a*S
qrt[-b^2 + 4*a*c]*e)*g*i^2*(f + g*x)^2*PolyLog[2, (-2*c*E^(h + i*
x))/(b + Sqrt[b^2 - 4*a*c])] - 12*Sqrt[-(b^2 - 4*a*c)^2]*d*f*g^2*
i*PolyLog[3, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] - 12*b*S
qrt[-b^2 + 4*a*c]*d*f*g^2*i*PolyLog[3, (2*c*E^(h + i*x))/(-b + Sq
rt[b^2 - 4*a*c])] + 24*a*Sqrt[-b^2 + 4*a*c]*e*f*g^2*i*PolyLog[3,
(2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] - 12*Sqrt[-(b^2 - 4*a
*c)^2]*d*g^3*i*x*PolyLog[3, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*
a*c])] - 12*b*Sqrt[-b^2 + 4*a*c]*d*g^3*i*x*PolyLog[3, (2*c*E^(h +
 i*x))/(-b + Sqrt[b^2 - 4*a*c])] + 24*a*Sqrt[-b^2 + 4*a*c]*e*g^3*
i*x*PolyLog[3, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] - 12*S
qrt[-(b^2 - 4*a*c)^2]*d*f*g^2*i*PolyLog[3, (-2*c*E^(h + i*x))/(b
+ Sqrt[b^2 - 4*a*c])] + 12*b*Sqrt[-b^2 + 4*a*c]*d*f*g^2*i*PolyLog
[3, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] - 24*a*Sqrt[-b^2
+ 4*a*c]*e*f*g^2*i*PolyLog[3, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 -
4*a*c])] - 12*Sqrt[-(b^2 - 4*a*c)^2]*d*g^3*i*x*PolyLog[3, (-2*c*E
^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] + 12*b*Sqrt[-b^2 + 4*a*c]*d*
g^3*i*x*PolyLog[3, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] -
24*a*Sqrt[-b^2 + 4*a*c]*e*g^3*i*x*PolyLog[3, (-2*c*E^(h + i*x))/(
b + Sqrt[b^2 - 4*a*c])] + 12*Sqrt[-(b^2 - 4*a*c)^2]*d*g^3*PolyLog
[4, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] + 12*b*Sqrt[-b^2
+ 4*a*c]*d*g^3*PolyLog[4, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*
c])] - 24*a*Sqrt[-b^2 + 4*a*c]*e*g^3*PolyLog[4, (2*c*E^(h + i*x))
/(-b + Sqrt[b^2 - 4*a*c])] + 12*Sqrt[-(b^2 - 4*a*c)^2]*d*g^3*Poly
Log[4, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] - 12*b*Sqrt[-b
^2 + 4*a*c]*d*g^3*PolyLog[4, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4
```

```
*a*c])] + 24*a*Sqrt[-b^2 + 4*a*c]*e*g^3*PolyLog[4, (-2*c*E^(h + i
*x))/(b + Sqrt[b^2 - 4*a*c])])/(4*a*Sqrt[-(b^2 - 4*a*c)^2]*i^4)
```

Maple [F] time = 0.17, size = 0, normalized size = 0.

$$\int \frac{\left(d+e\,e^{ix+h}\right)\left(gx+f\right)^{3}}{a+b\,e^{ix+h}+c\,e^{2\,ix+2\,h}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d+e*exp(i*x+h))*(g*x+f)^3/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] int((d+e*exp(i*x+h))*(g*x+f)^3/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),
x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)^3*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.380238, size = 2531, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)^3*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x
```

```
[Out] 1/4*((b^2 - 4*a*c)*d*g^3*i^4*x^4 + 4*(b^2 - 4*a*c)*d*f*g^2*i^4*x^
3 + 6*(b^2 - 4*a*c)*d*f^2*g*i^4*x^2 + 4*(b^2 - 4*a*c)*d*f^3*i^4*x
 - 6*((b^2 - 4*a*c)*d*g^3*i^2*x^2 + 2*(b^2 - 4*a*c)*d*f*g^2*i^2*x
 + (b^2 - 4*a*c)*d*f^2*g*i^2 - ((a*b*d - 2*a^2*e)*g^3*i^2*x^2 + 2
*(a*b*d - 2*a^2*e)*f*g^2*i^2*x + (a*b*d - 2*a^2*e)*f^2*g*i^2)*sqr
t((b^2 - 4*a*c)/a^2))*dilog(-(2*c*e^(i*x + h) + a*sqrt((b^2 - 4*a
*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) + b) + 1) - 6*((b^2 - 4*
a*c)*d*g^3*i^2*x^2 + 2*(b^2 - 4*a*c)*d*f*g^2*i^2*x + (b^2 - 4*a*c
)*d*f^2*g*i^2 + ((a*b*d - 2*a^2*e)*g^3*i^2*x^2 + 2*(a*b*d - 2*a^2
*e)*f*g^2*i^2*x + (a*b*d - 2*a^2*e)*f^2*g*i^2)*sqrt((b^2 - 4*a*c)
/a^2))*dilog((2*c*e^(i*x + h) - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a
*sqrt((b^2 - 4*a*c)/a^2) - b) + 1) + 2*((b^2 - 4*a*c)*d*g^3*h^3 -
 3*(b^2 - 4*a*c)*d*f*g^2*h^2*i + 3*(b^2 - 4*a*c)*d*f^2*g*h*i^2 -
(b^2 - 4*a*c)*d*f^3*i^3 - ((a*b*d - 2*a^2*e)*g^3*h^3 - 3*(a*b*d -
 2*a^2*e)*f*g^2*h^2*i + 3*(a*b*d - 2*a^2*e)*f^2*g*h*i^2 - (a*b*d
- 2*a^2*e)*f^3*i^3)*sqrt((b^2 - 4*a*c)/a^2))*log(2*c*e^(i*x + h)
+ a*sqrt((b^2 - 4*a*c)/a^2) + b) + 2*((b^2 - 4*a*c)*d*g^3*h^3 - 3
*(b^2 - 4*a*c)*d*f*g^2*h^2*i + 3*(b^2 - 4*a*c)*d*f^2*g*h*i^2 - (b
^2 - 4*a*c)*d*f^3*i^3 + ((a*b*d - 2*a^2*e)*g^3*h^3 - 3*(a*b*d - 2
*a^2*e)*f*g^2*h^2*i + 3*(a*b*d - 2*a^2*e)*f^2*g*h*i^2 - (a*b*d -
2*a^2*e)*f^3*i^3)*sqrt((b^2 - 4*a*c)/a^2))*log(2*c*e^(i*x + h) -
a*sqrt((b^2 - 4*a*c)/a^2) + b) - 2*((b^2 - 4*a*c)*d*g^3*i^3*x^3 +
 3*(b^2 - 4*a*c)*d*f*g^2*i^3*x^2 + 3*(b^2 - 4*a*c)*d*f^2*g*i^3*x
+ (b^2 - 4*a*c)*d*g^3*h^3 - 3*(b^2 - 4*a*c)*d*f*g^2*h^2*i + 3*(b^
2 - 4*a*c)*d*f^2*g*h*i^2 - ((a*b*d - 2*a^2*e)*g^3*i^3*x^3 + 3*(a*
```

```
b*d - 2*a^2*e)*f*g^2*i^3*x^2 + 3*(a*b*d - 2*a^2*e)*f^2*g*i^3*x +
(a*b*d - 2*a^2*e)*g^3*h^3 - 3*(a*b*d - 2*a^2*e)*f*g^2*h^2*i + 3*(
a*b*d - 2*a^2*e)*f^2*g*h*i^2)*sqrt((b^2 - 4*a*c)/a^2))*log((2*c*e
^(i*x + h) + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)
/a^2) + b)) - 2*((b^2 - 4*a*c)*d*g^3*i^3*x^3 + 3*(b^2 - 4*a*c)*d*
f*g^2*i^3*x^2 + 3*(b^2 - 4*a*c)*d*f^2*g*i^3*x + (b^2 - 4*a*c)*d*g
^3*h^3 - 3*(b^2 - 4*a*c)*d*f*g^2*h^2*i + 3*(b^2 - 4*a*c)*d*f^2*g*
h*i^2 + ((a*b*d - 2*a^2*e)*g^3*i^3*x^3 + 3*(a*b*d - 2*a^2*e)*f*g^
2*i^3*x^2 + 3*(a*b*d - 2*a^2*e)*f^2*g*i^3*x + (a*b*d - 2*a^2*e)*g
^3*h^3 - 3*(a*b*d - 2*a^2*e)*f*g^2*h^2*i + 3*(a*b*d - 2*a^2*e)*f^
2*g*h*i^2)*sqrt((b^2 - 4*a*c)/a^2))*log(-(2*c*e^(i*x + h) - a*sqr
t((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b)) - 12*(
(b^2 - 4*a*c)*d*g^3 - (a*b*d - 2*a^2*e)*g^3*sqrt((b^2 - 4*a*c)/a^
2))*polylog(4, -2*c*e^(i*x + h)/(a*sqrt((b^2 - 4*a*c)/a^2) + b))
- 12*((b^2 - 4*a*c)*d*g^3 + (a*b*d - 2*a^2*e)*g^3*sqrt((b^2 - 4*a
*c)/a^2))*polylog(4, 2*c*e^(i*x + h)/(a*sqrt((b^2 - 4*a*c)/a^2) -
 b)) + 12*((b^2 - 4*a*c)*d*g^3*i*x + (b^2 - 4*a*c)*d*f*g^2*i - ((
a*b*d - 2*a^2*e)*g^3*i*x + (a*b*d - 2*a^2*e)*f*g^2*i)*sqrt((b^2 -
 4*a*c)/a^2))*polylog(3, -2*c*e^(i*x + h)/(a*sqrt((b^2 - 4*a*c)/a
^2) + b)) + 12*((b^2 - 4*a*c)*d*g^3*i*x + (b^2 - 4*a*c)*d*f*g^2*i
 + ((a*b*d - 2*a^2*e)*g^3*i*x + (a*b*d - 2*a^2*e)*f*g^2*i)*sqrt((
b^2 - 4*a*c)/a^2))*polylog(3, 2*c*e^(i*x + h)/(a*sqrt((b^2 - 4*a*
c)/a^2) - b)))/((a*b^2 - 4*a^2*c)*i^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d+e*exp(i*x+h))*(g*x+f)**3/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^3\left(ee^{(ix+h)}+d\right)}{ce^{(2\,ix+2\,h)}+be^{(ix+h)}+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)^3*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x
```

```
[Out] integrate((g*x + f)^3*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*
e^(i*x + h) + a), x)
```

3.573 $\int \frac{\left(d+ee^{h+ix}\right)(f+gx)^2}{a+be^{h+ix}+ce^{2h+2ix}}\,dx$

Optimal. Leaf size=599

$$-\frac{2g(f+gx)\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^2\left(b-\sqrt{b^2-4ac}\right)}-\frac{2g(f+gx)\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^2\left(\sqrt{b^2-4ac}+b\right)}+\frac{2g^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^3\left(b-\sqrt{b^2-4ac}\right)}+\frac{2g^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^3\left(\sqrt{b^2-4ac}+b\right)}-\frac{(f+gx)^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\log\left(\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}+1\right)}{i\left(b-\sqrt{b^2-4ac}\right)}-\frac{(f+gx)^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}+1\right)}{i\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)}{3g\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^3\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)}{3g\left(b-\sqrt{b^2-4ac}\right)}$$

```
[Out] ((e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*x)^3)/(3*(b + Sqrt[
b^2 - 4*a*c])*g) + ((e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*
x)^3)/(3*(b - Sqrt[b^2 - 4*a*c])*g) - ((e + (2*c*d - b*e)/Sqrt[b^
2 - 4*a*c])*(f + g*x)^2*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 -
 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i) - ((e - (2*c*d - b*e)/Sqrt
[b^2 - 4*a*c])*(f + g*x)^2*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^
2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i) - (2*(e + (2*c*d - b*e)
/Sqrt[b^2 - 4*a*c])*g*(f + g*x)*PolyLog[2, (-2*c*E^(h + i*x))/(b
- Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i^2) - (2*(e - (2
*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g*(f + g*x)*PolyLog[2, (-2*c*E^(h
+ i*x))/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i^2) +
 (2*(e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*PolyLog[3, (-2*c*E^
(h + i*x))/(b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i^3
) + (2*(e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*PolyLog[3, (-2*c
*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*
i^3)
```

Rubi [A] time = 1.81304, antiderivative size = 599, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$

$$-\frac{2g(f+gx)\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^2\left(b-\sqrt{b^2-4ac}\right)}-\frac{2g(f+gx)\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^2\left(\sqrt{b^2-4ac}+b\right)}+\frac{2g^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^3\left(b-\sqrt{b^2-4ac}\right)}+\frac{2g^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(3,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^3\left(\sqrt{b^2-4ac}+b\right)}-\frac{(f+gx)^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\log\left(\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}+1\right)}{i\left(b-\sqrt{b^2-4ac}\right)}-\frac{(f+gx)^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}+1\right)}{i\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^3\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)}{3g\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^3\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)}{3g\left(b-\sqrt{b^2-4ac}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*E^(h + i*x))*(f + g*x)^2)/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x)),x]
```

```
[Out] ((e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*x)^3)/(3*(b + Sqrt[
b^2 - 4*a*c])*g) + ((e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*
x)^3)/(3*(b - Sqrt[b^2 - 4*a*c])*g) - ((e + (2*c*d - b*e)/Sqrt[b^
2 - 4*a*c])*(f + g*x)^2*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 -
 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i) - ((e - (2*c*d - b*e)/Sqrt
[b^2 - 4*a*c])*(f + g*x)^2*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^
2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i) - (2*(e + (2*c*d - b*e)
/Sqrt[b^2 - 4*a*c])*g*(f + g*x)*PolyLog[2, (-2*c*E^(h + i*x))/(b
- Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i^2) - (2*(e - (2
*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g*(f + g*x)*PolyLog[2, (-2*c*E^(h
+ i*x))/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i^2) +
 (2*(e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*PolyLog[3, (-2*c*E^
(h + i*x))/(b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i^3
) + (2*(e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*g^2*PolyLog[3, (-2*c
*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*
i^3)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d+e*exp(i*x+h))*(g*x+f)**2/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x
```

```
[Out] Timed out
```

Mathematica [B] time = 3.88921, size = 1412, normalized size = 2.36

$$-\frac{-2\sqrt{-(b^2-4ac)^2}dg^2x^3i^3-6\sqrt{-(b^2-4ac)^2}dfgx^2i^3-6\sqrt{-(b^2-4ac)^2}df^2xi^3+6b\sqrt{b^2-4ac}df^2\tan^{-1}\left(\frac{b+2ce^{h+ix}}{\sqrt{4ac-b^2}}\right)i^2-}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + e*E^(h + i*x))*(f + g*x)^2)/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))
```

```
[Out] -(-6*Sqrt[-(b^2 - 4*a*c)^2]*d*f^2*i^3*x - 6*Sqrt[-(b^2 - 4*a*c)^2
]*d*f*g*i^3*x^2 - 2*Sqrt[-(b^2 - 4*a*c)^2]*d*g^2*i^3*x^3 + 6*b*Sq
rt[b^2 - 4*a*c]*d*f^2*i^2*ArcTan[(b + 2*c*E^(h + i*x))/Sqrt[-b^2
+ 4*a*c]] - 12*a*Sqrt[b^2 - 4*a*c]*e*f^2*i^2*ArcTan[(b + 2*c*E^(h
 + i*x))/Sqrt[-b^2 + 4*a*c]] + 6*Sqrt[-(b^2 - 4*a*c)^2]*d*f*g*i^2
*x*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + 6*b*Sqrt[
-b^2 + 4*a*c]*d*f*g*i^2*x*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2
 - 4*a*c])] - 12*a*Sqrt[-b^2 + 4*a*c]*e*f*g*i^2*x*Log[1 + (2*c*E^
(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + 3*Sqrt[-(b^2 - 4*a*c)^2]*d*
g^2*i^2*x^2*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] +
3*b*Sqrt[-b^2 + 4*a*c]*d*g^2*i^2*x^2*Log[1 + (2*c*E^(h + i*x))/(b
 - Sqrt[b^2 - 4*a*c])] - 6*a*Sqrt[-b^2 + 4*a*c]*e*g^2*i^2*x^2*Log
[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + 6*Sqrt[-(b^2 -
4*a*c)^2]*d*f*g*i^2*x*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4
*a*c])] - 6*b*Sqrt[-b^2 + 4*a*c]*d*f*g*i^2*x*Log[1 + (2*c*E^(h +
i*x))/(b + Sqrt[b^2 - 4*a*c])] + 12*a*Sqrt[-b^2 + 4*a*c]*e*f*g*i^
2*x*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] + 3*Sqrt[-
(b^2 - 4*a*c)^2]*d*g^2*i^2*x^2*Log[1 + (2*c*E^(h + i*x))/(b + Sqr
t[b^2 - 4*a*c])] - 3*b*Sqrt[-b^2 + 4*a*c]*d*g^2*i^2*x^2*Log[1 + (
2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] + 6*a*Sqrt[-b^2 + 4*a*c
]*e*g^2*i^2*x^2*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])
] + 3*Sqrt[-(b^2 - 4*a*c)^2]*d*f^2*i^2*Log[a + E^(h + i*x)*(b + c
```

```
*E^(h + i*x))] + 6*(Sqrt[-(b^2 - 4*a*c)^2]*d + b*Sqrt[-b^2 + 4*a*
c]*d - 2*a*Sqrt[-b^2 + 4*a*c]*e)*g*i*(f + g*x)*PolyLog[2, (2*c*E^
(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] + 6*(Sqrt[-(b^2 - 4*a*c)^2]*
d - b*Sqrt[-b^2 + 4*a*c]*d + 2*a*Sqrt[-b^2 + 4*a*c]*e)*g*i*(f + g
*x)*PolyLog[2, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] - 6*Sq
rt[-(b^2 - 4*a*c)^2]*d*g^2*PolyLog[3, (2*c*E^(h + i*x))/(-b + Sqr
t[b^2 - 4*a*c])] - 6*b*Sqrt[-b^2 + 4*a*c]*d*g^2*PolyLog[3, (2*c*E
^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] + 12*a*Sqrt[-b^2 + 4*a*c]*e
*g^2*PolyLog[3, (2*c*E^(h + i*x))/(-b + Sqrt[b^2 - 4*a*c])] - 6*S
qrt[-(b^2 - 4*a*c)^2]*d*g^2*PolyLog[3, (-2*c*E^(h + i*x))/(b + Sq
rt[b^2 - 4*a*c])] + 6*b*Sqrt[-b^2 + 4*a*c]*d*g^2*PolyLog[3, (-2*c
*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] - 12*a*Sqrt[-b^2 + 4*a*c]*
e*g^2*PolyLog[3, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/(6*
a*Sqrt[-(b^2 - 4*a*c)^2]*i^3)
```

Maple [F] time = 0.112, size = 0, normalized size = 0.

$$\int \frac{\left(d+e\mathrm{e}^{ix+h}\right)\left(gx+f\right)^{2}}{a+b\mathrm{e}^{ix+h}+c\mathrm{e}^{2\,ix+2\,h}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d+e*exp(i*x+h))*(g*x+f)^2/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] int((d+e*exp(i*x+h))*(g*x+f)^2/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),
x)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)^2*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.303458, size = 1650, normalized size = 2.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)^2*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x
```

```
[Out] 1/6*(2*(b^2 - 4*a*c)*d*g^2*i^3*x^3 + 6*(b^2 - 4*a*c)*d*f*g*i^3*x^
2 + 6*(b^2 - 4*a*c)*d*f^2*i^3*x - 6*((b^2 - 4*a*c)*d*g^2*i*x + (b
^2 - 4*a*c)*d*f*g*i - ((a*b*d - 2*a^2*e)*g^2*i*x + (a*b*d - 2*a^2
*e)*f*g*i)*sqrt((b^2 - 4*a*c)/a^2))*dilog(-(2*c*e^(i*x + h) + a*s
qrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) + b) + 1)
- 6*((b^2 - 4*a*c)*d*g^2*i*x + (b^2 - 4*a*c)*d*f*g*i + ((a*b*d -
2*a^2*e)*g^2*i*x + (a*b*d - 2*a^2*e)*f*g*i)*sqrt((b^2 - 4*a*c)/a^
2))*dilog((2*c*e^(i*x + h) - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sq
rt((b^2 - 4*a*c)/a^2) - b) + 1) - 3*((b^2 - 4*a*c)*d*g^2*h^2 - 2*
(b^2 - 4*a*c)*d*f*g*h*i + (b^2 - 4*a*c)*d*f^2*i^2 - ((a*b*d - 2*a
^2*e)*g^2*h^2 - 2*(a*b*d - 2*a^2*e)*f*g*h*i + (a*b*d - 2*a^2*e)*f
^2*i^2)*sqrt((b^2 - 4*a*c)/a^2))*log(2*c*e^(i*x + h) + a*sqrt((b^
2 - 4*a*c)/a^2) + b) - 3*((b^2 - 4*a*c)*d*g^2*h^2 - 2*(b^2 - 4*a*
```

```
c)*d*f*g*h*i + (b^2 - 4*a*c)*d*f^2*i^2 + ((a*b*d - 2*a^2*e)*g^2*h
^2 - 2*(a*b*d - 2*a^2*e)*f*g*h*i + (a*b*d - 2*a^2*e)*f^2*i^2)*sqr
t((b^2 - 4*a*c)/a^2))*log(2*c*e^(i*x + h) - a*sqrt((b^2 - 4*a*c)/
a^2) + b) - 3*((b^2 - 4*a*c)*d*g^2*i^2*x^2 + 2*(b^2 - 4*a*c)*d*f*
g*i^2*x - (b^2 - 4*a*c)*d*g^2*h^2 + 2*(b^2 - 4*a*c)*d*f*g*h*i - (
(a*b*d - 2*a^2*e)*g^2*i^2*x^2 + 2*(a*b*d - 2*a^2*e)*f*g*i^2*x - (
a*b*d - 2*a^2*e)*g^2*h^2 + 2*(a*b*d - 2*a^2*e)*f*g*h*i)*sqrt((b^2
 - 4*a*c)/a^2))*log((2*c*e^(i*x + h) + a*sqrt((b^2 - 4*a*c)/a^2)
+ b)/(a*sqrt((b^2 - 4*a*c)/a^2) + b)) - 3*((b^2 - 4*a*c)*d*g^2*i^
2*x^2 + 2*(b^2 - 4*a*c)*d*f*g*i^2*x - (b^2 - 4*a*c)*d*g^2*h^2 + 2
*(b^2 - 4*a*c)*d*f*g*h*i + ((a*b*d - 2*a^2*e)*g^2*i^2*x^2 + 2*(a*
b*d - 2*a^2*e)*f*g*i^2*x - (a*b*d - 2*a^2*e)*g^2*h^2 + 2*(a*b*d -
 2*a^2*e)*f*g*h*i)*sqrt((b^2 - 4*a*c)/a^2))*log(-(2*c*e^(i*x + h)
 - a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b)
) + 6*((b^2 - 4*a*c)*d*g^2 - (a*b*d - 2*a^2*e)*g^2*sqrt((b^2 - 4*
a*c)/a^2))*polylog(3, -2*c*e^(i*x + h)/(a*sqrt((b^2 - 4*a*c)/a^2)
 + b)) + 6*((b^2 - 4*a*c)*d*g^2 + (a*b*d - 2*a^2*e)*g^2*sqrt((b^2
 - 4*a*c)/a^2))*polylog(3, 2*c*e^(i*x + h)/(a*sqrt((b^2 - 4*a*c)/
a^2) - b)))/((a*b^2 - 4*a^2*c)*i^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d+e*exp(i*x+h))*(g*x+f)**2/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)^2\left(ee^{(ix+h)}+d\right)}{ce^{(2\,ix+2\,h)}+be^{(ix+h)}+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)^2*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x
```

```
[Out] integrate((g*x + f)^2*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*
e^(i*x + h) + a), x)
```

3.574 $\int \frac{\left(d+ee^{h+ix}\right)(f+gx)}{a+be^{h+ix}+ce^{2h+2ix}}\,dx$

Optimal. Leaf size=428

$$-\frac{g\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^2\left(b-\sqrt{b^2-4ac}\right)}-\frac{g\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^2\left(\sqrt{b^2-4ac}+b\right)}-\frac{(f+gx)\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\log\left(\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}+1\right)}{i\left(b-\sqrt{b^2-4ac}\right)}-\frac{(f+gx)\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}+1\right)}{i\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)}{2g\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)}{2g\left(b-\sqrt{b^2-4ac}\right)}$$

```
[Out] ((e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*x)^2)/(2*(b + Sqrt[
b^2 - 4*a*c])*g) + ((e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*
x)^2)/(2*(b - Sqrt[b^2 - 4*a*c])*g) - ((e + (2*c*d - b*e)/Sqrt[b^
2 - 4*a*c])*(f + g*x)*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4
*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i) - ((e - (2*c*d - b*e)/Sqrt[b
^2 - 4*a*c])*(f + g*x)*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 -
4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i) - ((e + (2*c*d - b*e)/Sqrt[
b^2 - 4*a*c])*g*PolyLog[2, (-2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a
*c])])/((b - Sqrt[b^2 - 4*a*c])*i^2) - ((e - (2*c*d - b*e)/Sqrt[b
^2 - 4*a*c])*g*PolyLog[2, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*
c])])/((b + Sqrt[b^2 - 4*a*c])*i^2)
```

Rubi [A] time = 0.980133, antiderivative size = 428, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.119

$$-\frac{g\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}\right)}{i^2\left(b-\sqrt{b^2-4ac}\right)}-\frac{g\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\text{PolyLog}\left(2,-\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}\right)}{i^2\left(\sqrt{b^2-4ac}+b\right)}-\frac{(f+gx)\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)\log\left(\frac{2ce^{h+ix}}{b-\sqrt{b^2-4ac}}+1\right)}{i\left(b-\sqrt{b^2-4ac}\right)}-\frac{(f+gx)\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\log\left(\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}+b}+1\right)}{i\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^2\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)}{2g\left(\sqrt{b^2-4ac}+b\right)}+\frac{(f+gx)^2\left(\frac{2cd-be}{\sqrt{b^2-4ac}}+e\right)}{2g\left(b-\sqrt{b^2-4ac}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*E^(h + i*x))*(f + g*x))/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x)),x]
```


```
[Out] ((e - (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*x)^2)/(2*(b + Sqrt[
b^2 - 4*a*c])*g) + ((e + (2*c*d - b*e)/Sqrt[b^2 - 4*a*c])*(f + g*
x)^2)/(2*(b - Sqrt[b^2 - 4*a*c])*g) - ((e + (2*c*d - b*e)/Sqrt[b^
2 - 4*a*c])*(f + g*x)*Log[1 + (2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4
*a*c])])/((b - Sqrt[b^2 - 4*a*c])*i) - ((e - (2*c*d - b*e)/Sqrt[b
^2 - 4*a*c])*(f + g*x)*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 -
4*a*c])])/((b + Sqrt[b^2 - 4*a*c])*i) - ((e + (2*c*d - b*e)/Sqrt[
b^2 - 4*a*c])*g*PolyLog[2, (-2*c*E^(h + i*x))/(b - Sqrt[b^2 - 4*a
*c])])/((b - Sqrt[b^2 - 4*a*c])*i^2) - ((e - (2*c*d - b*e)/Sqrt[b
^2 - 4*a*c])*g*PolyLog[2, (-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*
c])])/((b + Sqrt[b^2 - 4*a*c])*i^2)
```

Rubi in Sympy [A] time = 84.7189, size = 314, normalized size = 0.73

$$\frac{g\left(be-2cd+e\sqrt{-4ac+b^2}\right)\mathrm{Li}_2\left(-\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-h-ix}}{2c}\right)}{i^2\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)}+\frac{g\left(be-2cd-e\sqrt{-4ac+b^2}\right)\mathrm{Li}_2\left(-\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-h-ix}}{2c}\right)}{i^2\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)}-\frac{(f+gx)\left(be-2cd+e\sqrt{-4ac+b^2}\right)\log\left(1+\frac{\left(b+\sqrt{-4ac+b^2}\right)e^{-h-ix}}{2c}\right)}{i\left(-4ac+b^2+b\sqrt{-4ac+b^2}\right)}-\frac{(f+gx)\left(be-2cd-e\sqrt{-4ac+b^2}\right)\log\left(1+\frac{\left(b-\sqrt{-4ac+b^2}\right)e^{-h-ix}}{2c}\right)}{i\left(-4ac+b^2-b\sqrt{-4ac+b^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d+e*exp(i*x+h))*(g*x+f)/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] g*(b*e - 2*c*d + e*sqrt(-4*a*c + b**2))*polylog(2, -(b + sqrt(-4*
a*c + b**2))*exp(-h - i*x)/(2*c))/(i**2*(-4*a*c + b**2 + b*sqrt(-
4*a*c + b**2))) + g*(b*e - 2*c*d - e*sqrt(-4*a*c + b**2))*polylog
(2, -(b - sqrt(-4*a*c + b**2))*exp(-h - i*x)/(2*c))/(i**2*(-4*a*c
 + b**2 - b*sqrt(-4*a*c + b**2))) - (f + g*x)*(b*e - 2*c*d + e*sq
rt(-4*a*c + b**2))*log(1 + (b + sqrt(-4*a*c + b**2))*exp(-h - i*x
)/(2*c))/(i*(-4*a*c + b**2 + b*sqrt(-4*a*c + b**2))) - (f + g*x)*
(b*e - 2*c*d - e*sqrt(-4*a*c + b**2))*log(1 + (b - sqrt(-4*a*c +
b**2))*exp(-h - i*x)/(2*c))/(i*(-4*a*c + b**2 - b*sqrt(-4*a*c + b
**2)))
```

Mathematica [A] time = 4.18702, size = 574, normalized size = 1.34

$$-\frac{g\left(d\sqrt{-\left(b^2-4ac\right)^2}+bd\sqrt{4ac-b^2}-2ae\sqrt{4ac-b^2}\right)\mathrm{PolyLog}\left(2,\frac{2ce^{h+ix}}{\sqrt{b^2-4ac}-b}\right)+g\left(d\sqrt{-\left(b^2-4ac\right)^2}-bd\sqrt{4ac-b^2}+2ae\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((d + e*E^(h + i*x))*(f + g*x))/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x)),x
```

```
[Out] -(i*(-2*Sqrt[-(b^2 - 4*a*c)^2]*d*f*i*x - Sqrt[-(b^2 - 4*a*c)^2]*d
*g*i*x^2 + 2*Sqrt[b^2 - 4*a*c]*(b*d - 2*a*e)*f*ArcTan[(b + 2*c*E^
(h + i*x))/Sqrt[-b^2 + 4*a*c]] + (Sqrt[-(b^2 - 4*a*c)^2]*d + b*Sq
rt[-b^2 + 4*a*c]*d - 2*a*Sqrt[-b^2 + 4*a*c]*e)*g*x*Log[1 + (2*c*E
^(h + i*x))/(b - Sqrt[b^2 - 4*a*c])] + Sqrt[-(b^2 - 4*a*c)^2]*d*g
*x*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])] - b*Sqrt[-b
^2 + 4*a*c]*d*g*x*Log[1 + (2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c
])] + 2*a*Sqrt[-b^2 + 4*a*c]*e*g*x*Log[1 + (2*c*E^(h + i*x))/(b +
 Sqrt[b^2 - 4*a*c])] + Sqrt[-(b^2 - 4*a*c)^2]*d*f*Log[a + E^(h +
i*x)*(b + c*E^(h + i*x))]) + (Sqrt[-(b^2 - 4*a*c)^2]*d + b*Sqrt[-
b^2 + 4*a*c]*d - 2*a*Sqrt[-b^2 + 4*a*c]*e)*g*PolyLog[2, (2*c*E^(h
 + i*x))/(-b + Sqrt[b^2 - 4*a*c])] + (Sqrt[-(b^2 - 4*a*c)^2]*d -
b*Sqrt[-b^2 + 4*a*c]*d + 2*a*Sqrt[-b^2 + 4*a*c]*e)*g*PolyLog[2, (
-2*c*E^(h + i*x))/(b + Sqrt[b^2 - 4*a*c])])/(2*a*Sqrt[-(b^2 - 4*a
*c)^2]*i^2)
```

Maple [C] time = 0.055, size = 1261, normalized size = 3.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d+e*exp(i*x+h))*(g*x+f)/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] d*f/i/a*ln(exp(i*x))-1/2*d*f/i/a*ln(a+b*exp(i*x)*exp(h)+c*exp(i*x
)^2*exp(2*h))-d*f/i/a*exp(h)*b/(4*a*c*exp(2*h)-exp(h)^2*b^2)^(1/2
)*arctan((exp(h)*b+2*exp(2*h)*exp(i*x)*c)/(4*a*c*exp(2*h)-exp(h)^
2*b^2)^(1/2))+1/2*d*g/a*x^2-1/2*d*g/i/a*x/(exp(h)^2*b^2-4*a*c*exp
(2*h))^(1/2)*ln((2*exp(2*h)*exp(i*x)*c+exp(h)*b-(exp(h)^2*b^2-4*a
*c*exp(2*h))^(1/2))/(exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)
))*exp(h)*b+1/2*d*g/i/a*x/(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)*ln(
(2*exp(2*h)*exp(i*x)*c+exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/
2))/(exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))*exp(h)*b-1/2*
d*g/i/a*x*ln((2*exp(2*h)*exp(i*x)*c+exp(h)*b-(exp(h)^2*b^2-4*a*c*
exp(2*h))^(1/2))/(exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))-
1/2*d*g/i/a*x*ln((2*exp(2*h)*exp(i*x)*c+exp(h)*b+(exp(h)^2*b^2-4*
a*c*exp(2*h))^(1/2))/(exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2
)))-1/2*d*g/i^2/a/(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)*dilog((2*ex
p(2*h)*exp(i*x)*c+exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2))/(
exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))*exp(h)*b+1/2*d*g/i
^2/a/(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)*dilog((2*exp(2*h)*exp(i*
x)*c+exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2))/(exp(h)*b+(exp
(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))*exp(h)*b-1/2*d*g/i^2/a*dilog((2
*exp(2*h)*exp(i*x)*c+exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)
)/(exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))-1/2*d*g/i^2/a*d
ilog((2*exp(2*h)*exp(i*x)*c+exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h)
)^(1/2))/(exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))+2*e*exp(
h)*f/i/(4*a*c*exp(2*h)-exp(h)^2*b^2)^(1/2)*arctan((exp(h)*b+2*exp
(2*h)*exp(i*x)*c)/(4*a*c*exp(2*h)-exp(h)^2*b^2)^(1/2))+e*exp(h)*g
/i*x/(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)*ln((2*exp(2*h)*exp(i*x)*
c+exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2))/(exp(h)*b-(exp(h)
^2*b^2-4*a*c*exp(2*h))^(1/2)))-e*exp(h)*g/i*x/(exp(h)^2*b^2-4*a*c
*exp(2*h))^(1/2)*ln((2*exp(2*h)*exp(i*x)*c+exp(h)*b+(exp(h)^2*b^2
-4*a*c*exp(2*h))^(1/2))/(exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(
1/2)))+e*exp(h)*g/i^2/(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)*dilog((
2*exp(2*h)*exp(i*x)*c+exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2
))/(exp(h)*b-(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)))-e*exp(h)*g/i^2
/(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2)*dilog((2*exp(2*h)*exp(i*x)*c
+exp(h)*b+(exp(h)^2*b^2-4*a*c*exp(2*h))^(1/2))/(exp(h)*b+(exp(h)^
2*b^2-4*a*c*exp(2*h))^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x,
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.284355, size = 936, normalized size = 2.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x,
```

```
[Out] 1/2*((b^2 - 4*a*c)*d*g*i^2*x^2 + 2*(b^2 - 4*a*c)*d*f*i^2*x - ((b^
2 - 4*a*c)*d*g - (a*b*d - 2*a^2*e)*g*sqrt((b^2 - 4*a*c)/a^2))*dil
og(-(2*c*e^(i*x + h) + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*sqrt((b^
2 - 4*a*c)/a^2) + b) + 1) - ((b^2 - 4*a*c)*d*g + (a*b*d - 2*a^2*e
)*g*sqrt((b^2 - 4*a*c)/a^2))*dilog((2*c*e^(i*x + h) - a*sqrt((b^2
 - 4*a*c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b) + 1) + ((b^2
- 4*a*c)*d*g*h - (b^2 - 4*a*c)*d*f*i - ((a*b*d - 2*a^2*e)*g*h - (
a*b*d - 2*a^2*e)*f*i)*sqrt((b^2 - 4*a*c)/a^2))*log(2*c*e^(i*x + h
) + a*sqrt((b^2 - 4*a*c)/a^2) + b) + ((b^2 - 4*a*c)*d*g*h - (b^2
- 4*a*c)*d*f*i + ((a*b*d - 2*a^2*e)*g*h - (a*b*d - 2*a^2*e)*f*i)*
sqrt((b^2 - 4*a*c)/a^2))*log(2*c*e^(i*x + h) - a*sqrt((b^2 - 4*a*
c)/a^2) + b) - ((b^2 - 4*a*c)*d*g*i*x + (b^2 - 4*a*c)*d*g*h - ((a
*b*d - 2*a^2*e)*g*i*x + (a*b*d - 2*a^2*e)*g*h)*sqrt((b^2 - 4*a*c)
/a^2))*log((2*c*e^(i*x + h) + a*sqrt((b^2 - 4*a*c)/a^2) + b)/(a*s
qrt((b^2 - 4*a*c)/a^2) + b)) - ((b^2 - 4*a*c)*d*g*i*x + (b^2 - 4*
a*c)*d*g*h + ((a*b*d - 2*a^2*e)*g*i*x + (a*b*d - 2*a^2*e)*g*h)*sq
rt((b^2 - 4*a*c)/a^2))*log(-(2*c*e^(i*x + h) - a*sqrt((b^2 - 4*a*
c)/a^2) + b)/(a*sqrt((b^2 - 4*a*c)/a^2) - b)))/((a*b^2 - 4*a^2*c)
*i^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d+e*exp(i*x+h))*(g*x+f)/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(gx+f)\left(ee^{(ix+h)}+d\right)}{ce^{(2\,ix+2\,h)}+be^{(ix+h)}+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x + f)*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x,
```

```
[Out] integrate((g*x + f)*(e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^
(i*x + h) + a), x)
```

3.575 $\int \frac{d+ee^{h+ix}}{a+be^{h+ix}+ce^{2h+2ix}}\,dx$

Optimal. Leaf size=95

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2ce^{h+ix}}{\sqrt{b^2-4ac}}\right)}{ai\sqrt{b^2-4ac}}-\frac{d\log\left(a+be^{h+ix}+ce^{2h+2ix}\right)}{2ai}+\frac{dx}{a}$$

```
[Out] (d*x)/a + ((b*d - 2*a*e)*ArcTanh[(b + 2*c*E^(h + i*x))/Sqrt[b^2 -
 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]*i) - (d*Log[a + b*E^(h + i*x) + c*
E^(2*h + 2*i*x)])/(2*a*i)
```

Rubi [A] time = 0.288396, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.162

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2ce^{h+ix}}{\sqrt{b^2-4ac}}\right)}{ai\sqrt{b^2-4ac}}-\frac{d\log\left(a+be^{h+ix}+ce^{2h+2ix}\right)}{2ai}+\frac{dx}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(d + e*E^(h + i*x))/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x)),x]
```

```
[Out] (d*x)/a + ((b*d - 2*a*e)*ArcTanh[(b + 2*c*E^(h + i*x))/Sqrt[b^2 -
 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]*i) - (d*Log[a + b*E^(h + i*x) + c*
E^(2*h + 2*i*x)])/(2*a*i)
```

Rubi in Sympy [A] time = 57.2893, size = 138, normalized size = 1.45

$$-\frac{de^{-h-ix}e^{h+ix}\log\left(a+be^{h+ix}+ce^{2h+2ix}\right)}{2ai}+\frac{de^{-h-ix}e^{h+ix}\log\left(e^{h+ix}\right)}{ai}-\frac{(2ae-bd)\,e^{-h-ix}e^{h+ix}\operatorname{atanh}\left(\frac{b+2ce^{h+ix}}{\sqrt{-4ac+b^2}}\right)}{ai\sqrt{-4ac+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] -d*exp(-h - i*x)*exp(h + i*x)*log(a + b*exp(h + i*x) + c*exp(2*h
+ 2*i*x))/(2*a*i) + d*exp(-h - i*x)*exp(h + i*x)*log(exp(h + i*x)
)/(a*i) - (2*a*e - b*d)*exp(-h - i*x)*exp(h + i*x)*atanh((b + 2*c
*exp(h + i*x))/sqrt(-4*a*c + b**2))/(a*i*sqrt(-4*a*c + b**2))
```

Mathematica [A] time = 0.267414, size = 94, normalized size = 0.99

$$-\frac{\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2ce^{h+ix}}{\sqrt{4ac-b^2}}\right)}{i\sqrt{4ac-b^2}}+\frac{d\log\left(a+e^{h+ix}\left(b+ce^{h+ix}\right)\right)}{i}-2dx}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d + e*E^(h + i*x))/(a + b*E^(h + i*x) + c*E^(2*h + 2*i*x)),x]
```

```
[Out] -(-2*d*x + (2*(b*d - 2*a*e)*ArcTan[(b + 2*c*E^(h + i*x))/Sqrt[-b^
2 + 4*a*c]])/(Sqrt[-b^2 + 4*a*c]*i) + (d*Log[a + E^(h + i*x)*(b +
```

```
c*E^(h + i*x))])/i)/(2*a)
```

Maple [B] time = 0.005, size = 183, normalized size = 1.9

$$\frac{d\ln\left(e^{ix}\right)}{ai}-\frac{d\ln\left(a+be^{ix}e^{h}+c\left(e^{ix}\right)^{2}e^{2h}\right)}{2ai}-\frac{de^{h}b}{ai}\arctan\left(\left(e^{h}b+2e^{2h}e^{ix}c\right)\frac{1}{\sqrt{4ace^{2h}-\left(e^{h}\right)^{2}b^{2}}}\right)\frac{1}{\sqrt{4ace^{2h}-\left(e^{h}\right)^{2}b^{2}}}+2\frac{ee^{h}}{i\sqrt{4ace^{2h}-\left(e^{h}\right)^{2}b^{2}}}\arctan\left(\frac{e^{h}b+2e^{2h}e^{ix}c}{\sqrt{4ace^{2h}-\left(e^{h}\right)^{2}b^{2}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] d/i/a*ln(exp(i*x))-1/2*d/i/a*ln(a+b*exp(i*x)*exp(h)+c*exp(i*x)^2*
exp(2*h))-d/i/a*exp(h)*b/(4*a*c*exp(2*h)-exp(h)^2*b^2)^(1/2)*arct
an((exp(h)*b+2*exp(2*h)*exp(i*x)*c)/(4*a*c*exp(2*h)-exp(h)^2*b^2)
^(1/2))+2*e*exp(h)/i/(4*a*c*exp(2*h)-exp(h)^2*b^2)^(1/2)*arctan((
exp(h)*b+2*exp(2*h)*exp(i*x)*c)/(4*a*c*exp(2*h)-exp(h)^2*b^2)^(1/
2))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x, algorithm
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.281824, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{b^{2}-4\,ac}dix-\sqrt{b^{2}-4\,ac}d\log\left(ce^{(2\,ix+2\,h)}+be^{(ix+h)}+a\right)-(bd-2\,ae)\log\left(-\frac{b^{3}-4\,abc+2\left(b^{2}c-4\,ac^{2}\right)e^{(ix+h)}-\left(2\,c^{2}e^{(2\,ix+2\,h)}+2\,b\right.}{ce^{(2\,ix+2\,h)}+be^{(ix+h)}+a}\right.}{2\sqrt{b^{2}-4\,ac}ai}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x, algorithm
```

```
[Out] [1/2*(2*sqrt(b^2 - 4*a*c)*d*i*x - sqrt(b^2 - 4*a*c)*d*log(c*e^(2*
i*x + 2*h) + b*e^(i*x + h) + a) - (b*d - 2*a*e)*log(-(b^3 - 4*a*b
*c + 2*(b^2*c - 4*a*c^2)*e^(i*x + h) - (2*c^2*e^(2*i*x + 2*h) + 2
*b*c*e^(i*x + h) + b^2 - 2*a*c)*sqrt(b^2 - 4*a*c))/(c*e^(2*i*x +
2*h) + b*e^(i*x + h) + a)))/(sqrt(b^2 - 4*a*c)*a*i), 1/2*(2*sqrt(
-b^2 + 4*a*c)*d*i*x - sqrt(-b^2 + 4*a*c)*d*log(c*e^(2*i*x + 2*h)
+ b*e^(i*x + h) + a) - 2*(b*d - 2*a*e)*arctan(-sqrt(-b^2 + 4*a*c)
*(2*c*e^(i*x + h) + b)/(b^2 - 4*a*c)))/(sqrt(-b^2 + 4*a*c)*a*i)]
```

Sympy [A] time = 1.1462, size = 116, normalized size = 1.22

$$\operatorname{RootSum}\left(z^2\left(4a^2ci^2 - ab^2i^2\right) + z\left(4acdi - b^2di\right) + ae^2 - bde + cd^2, \left(i \mapsto i\log\left(e^{h+ix} + \frac{4ia^2ci - iab^2i + abe + 2acd - b^2d}{2ace - bcd}\right)\right)\right) + \frac{dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h)),x)
```

```
[Out] RootSum(_z**2*(4*a**2*c*i**2 - a*b**2*i**2) + _z*(4*a*c*d*i - b**
2*d*i) + a*e**2 - b*d*e + c*d**2, Lambda(_i, _i*log(exp(h + i*x)
+ (4*_i*a**2*c*i - _i*a*b**2*i + a*b*e + 2*a*c*d - b**2*d)/(2*a*c
*e - b*c*d)))) + d*x/a
```

GIAC/XCAS [A] time = 0.237275, size = 161, normalized size = 1.69

$$\frac{1}{2}\left(\frac{2\left(bde^{(3h)} - 2ae^{(3h+1)}\right)\arctan\left(\frac{\left(2ce^{(ix+4h)} + be^{(3h)}\right)e^{(-3h)}}{\sqrt{-b^2+4ac}}\right)e^{(-3h)}}{\sqrt{-b^2+4ac}a} - \frac{8dh}{a} + \frac{d\ln\left(ce^{(2ix+8h)} + be^{(ix+7h)} + ae^{(6h)}\right)}{a}\right)i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e*e^(i*x + h) + d)/(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a),x, algorithm
```

```
[Out] 1/2*(2*(b*d*e^(3*h) - 2*a*e^(3*h + 1))*arctan((2*c*e^(i*x + 4*h)
+ b*e^(3*h))*e^(-3*h)/sqrt(-b^2 + 4*a*c))*e^(-3*h)/(sqrt(-b^2 + 4
*a*c)*a) - 8*d*h/a + d*ln(c*e^(2*i*x + 8*h) + b*e^(i*x + 7*h) + a
*e^(6*h))/a)*i
```

3.576 $\int \frac{d+ee^{h+ix}}{(a+be^{h+ix}+ce^{2h+2ix})(f+gx)}\,dx$

Optimal. Leaf size=84

$$d\mathrm{Int}\left(\frac{1}{(f+gx)\left(a+be^{h+ix}+ce^{2h+2ix}\right)},x\right)+e\mathrm{Int}\left(\frac{e^{h+ix}}{(f+gx)\left(a+be^{h+ix}+ce^{2h+2ix}\right)},x\right)$$

```
[Out] d*CannotIntegrate[1/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f +
 g*x)), x] + e*CannotIntegrate[E^(h + i*x)/((a + b*E^(h + i*x) +
c*E^(2*h + 2*i*x))*(f + g*x)), x]
```

Rubi [A] time = 1.58553, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\mathrm{Int}\left(\frac{d+ee^{h+ix}}{\left(a+be^{h+ix}+ce^{2h+2ix}\right)(f+gx)},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[(d + e*E^(h + i*x))/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f + g*x)),x]
```

```
[Out] d*Defer[Int][1/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f + g*x)
), x] + e*Defer[Int][E^(h + i*x)/((a + b*E^(h + i*x) + c*E^(2*h +
 2*i*x))*(f + g*x)), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f),x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.533448, size = 0, normalized size = 0.

$$\int \frac{d+ee^{h+ix}}{\left(a+be^{h+ix}+ce^{2h+2ix}\right)(f+gx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(d + e*E^(h + i*x))/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f + g*x)),x
```

```
[Out] Integrate[(d + e*E^(h + i*x))/((a + b*E^(h + i*x) + c*E^(2*h + 2*
i*x))*(f + g*x)), x]
```

Maple [A] time = 0.115, size = 0, normalized size = 0.

$$\int \frac{d+ee^{ix+h}}{\left(a+be^{ix+h}+ce^{2\,ix+2\,h}\right)(gx+f)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f),x)
```

```
[Out] int((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{ee^{(ix+h)} + d}{(gx+f)\left(ce^{(2\,ix+2\,h)} + be^{(ix+h)} + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*e^(i*x + h) + d)/((g*x + f)*(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a)),x
```

```
[Out] integrate((e*e^(i*x + h) + d)/((g*x + f)*(c*e^(2*i*x + 2*h) + b*e
^(i*x + h) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ee^{(ix+h)} + d}{agx + af + (cgx + cf)e^{(2\,ix+2\,h)} + (bgx + bf)e^{(ix+h)}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*e^(i*x + h) + d)/((g*x + f)*(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a)),x
```

```
[Out] integral((e*e^(i*x + h) + d)/(a*g*x + a*f + (c*g*x + c*f)*e^(2*i*
x + 2*h) + (b*g*x + b*f)*e^(i*x + h)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{ee^{(ix+h)} + d}{(gx+f)\left(ce^{(2\,ix+2\,h)} + be^{(ix+h)} + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*e^(i*x + h) + d)/((g*x + f)*(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a)),x
```

```
[Out] integrate((e*e^(i*x + h) + d)/((g*x + f)*(c*e^(2*i*x + 2*h) + b*e
^(i*x + h) + a)), x)
```

3.577 $\int \frac{d+ee^{h+ix}}{\left(a+be^{h+ix}+ce^{2h+2ix}\right)(f+gx)^2}\,dx$

Optimal. Leaf size=84

$$d\mathrm{Int}\left(\frac{1}{(f+gx)^2\left(a+be^{h+ix}+ce^{2h+2ix}\right)},x\right)+e\mathrm{Int}\left(\frac{e^{h+ix}}{(f+gx)^2\left(a+be^{h+ix}+ce^{2h+2ix}\right)},x\right)$$

```
[Out] d*CannotIntegrate[1/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f +
 g*x)^2), x] + e*CannotIntegrate[E^(h + i*x)/((a + b*E^(h + i*x)
+ c*E^(2*h + 2*i*x))*(f + g*x)^2), x]
```

Rubi [A] time = 1.37832, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\mathrm{Int}\left(\frac{d+ee^{h+ix}}{\left(a+be^{h+ix}+ce^{2h+2ix}\right)(f+gx)^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[(d + e*E^(h + i*x))/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f + g*x)^2),x]
```

```
[Out] d*Defer[Int][1/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f + g*x)
^2), x] + e*Defer[Int][E^(h + i*x)/((a + b*E^(h + i*x) + c*E^(2*h
 + 2*i*x))*(f + g*x)^2), x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f)**2,x
```

```
[Out] Timed out
```

Mathematica [A] time = 5.3471, size = 0, normalized size = 0.

$$\int \frac{d+ee^{h+ix}}{\left(a+be^{h+ix}+ce^{2h+2ix}\right)(f+gx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(d + e*E^(h + i*x))/((a + b*E^(h + i*x) + c*E^(2*h + 2*i*x))*(f + g*x)^2)
```

```
[Out] Integrate[(d + e*E^(h + i*x))/((a + b*E^(h + i*x) + c*E^(2*h + 2*
i*x))*(f + g*x)^2), x]
```

Maple [A] time = 0.142, size = 0, normalized size = 0.

$$\int \frac{d+e{e}^{ix+h}}{\left(a+b{e}^{ix+h}+c{e}^{2\,ix+2\,h}\right)(gx+f)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f)^2,x)
```

```
[Out] int((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f)^2,
x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{ee^{(ix+h)} + d}{(gx+f)^2 \left(ce^{(2\,ix+2\,h)} + be^{(ix+h)} + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*e^(i*x + h) + d)/((g*x + f)^2*(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a))
```

```
[Out] integrate((e*e^(i*x + h) + d)/((g*x + f)^2*(c*e^(2*i*x + 2*h) + b
*e^(i*x + h) + a)), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{ee^{(ix+h)} + d}{ag^2x^2 + 2\,afgx + af^2 + (cg^2x^2 + 2\,cfgx + cf^2)e^{(2\,ix+2\,h)} + (bg^2x^2 + 2\,bfgx + bf^2)e^{(ix+h)}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*e^(i*x + h) + d)/((g*x + f)^2*(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a))
```

```
[Out] integral((e*e^(i*x + h) + d)/(a*g^2*x^2 + 2*a*f*g*x + a*f^2 + (c*
g^2*x^2 + 2*c*f*g*x + c*f^2)*e^(2*i*x + 2*h) + (b*g^2*x^2 + 2*b*f
*g*x + b*f^2)*e^(i*x + h)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d+e*exp(i*x+h))/(a+b*exp(i*x+h)+c*exp(2*i*x+2*h))/(g*x+f)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

undef

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*e^(i*x + h) + d)/((g*x + f)^2*(c*e^(2*i*x + 2*h) + b*e^(i*x + h) + a))
```

```
[Out] undef
```

3.578 $\int \frac{\left(be-aee^{c+dx}\right)x}{be-2aee^{c+dx}-bee^{2(c+dx)}}\,dx$

Optimal. Leaf size=150

$$-\frac{\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2d^2}-\frac{\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{2d^2}-\frac{x\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{2d}-\frac{x\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{2d}+\frac{x^2}{2}$$

```
[Out] x^2/2 - (x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(2*d)
- (x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(2*d) - Poly
Log[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]/(2*d^2) - PolyLo
g[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]/(2*d^2)
```

Rubi [A] time = 0.986193, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 5, integrand size = 47, $\frac{\text{number of rules}}{\text{integrand size}} = 0.106$

$$-\frac{\text{PolyLog}\left(2,-\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}\right)}{2d^2}-\frac{\text{PolyLog}\left(2,-\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}\right)}{2d^2}-\frac{x\log\left(\frac{be^{c+dx}}{a-\sqrt{a^2+b^2}}+1\right)}{2d}-\frac{x\log\left(\frac{be^{c+dx}}{\sqrt{a^2+b^2}+a}+1\right)}{2d}+\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((b*e - a*e*E^(c + d*x))*x)/(b*e - 2*a*e*E^(c + d*x) - b*e*E^(2*(c + d*x))),x]
```

```
[Out] x^2/2 - (x*Log[1 + (b*E^(c + d*x))/(a - Sqrt[a^2 + b^2])])/(2*d)
- (x*Log[1 + (b*E^(c + d*x))/(a + Sqrt[a^2 + b^2])])/(2*d) - Poly
Log[2, -((b*E^(c + d*x))/(a - Sqrt[a^2 + b^2]))]/(2*d^2) - PolyLo
g[2, -((b*E^(c + d*x))/(a + Sqrt[a^2 + b^2]))]/(2*d^2)
```

Rubi in Sympy [A] time = 68.3132, size = 121, normalized size = 0.81

$$-\frac{x\log\left(1-\frac{\left(-a+\sqrt{a^2+b^2}\right)e^{-c-dx}}{b}\right)}{2d}-\frac{x\log\left(1+\frac{\left(a+\sqrt{a^2+b^2}\right)e^{-c-dx}}{b}\right)}{2d}+\frac{\text{Li}_2\left(-\frac{\left(a-\sqrt{a^2+b^2}\right)e^{-c-dx}}{b}\right)}{2d^2}+\frac{\text{Li}_2\left(-\frac{\left(a+\sqrt{a^2+b^2}\right)e^{-c-dx}}{b}\right)}{2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*e-a*e*exp(d*x+c))*x/(b*e-2*a*e*exp(d*x+c)-b*e*exp(2*d*x+2*c)
```

```
[Out] -x*log(1 - (-a + sqrt(a**2 + b**2))*exp(-c - d*x)/b)/(2*d) - x*lo
g(1 + (a + sqrt(a**2 + b**2))*exp(-c - d*x)/b)/(2*d) + polylog(2,
 -(a - sqrt(a**2 + b**2))*exp(-c - d*x)/b)/(2*d**2) + polylog(2,
-(a + sqrt(a**2 + b**2))*exp(-c - d*x)/b)/(2*d**2)
```

Mathematica [A] time = 0.391094, size = 176, normalized size = 1.17

$$-\frac{\text{PolyLog}\left(2,-\frac{be^{2c+dx}}{ae^c-\sqrt{e^{2c}(a^2+b^2)}}\right)+\text{PolyLog}\left(2,-\frac{be^{2c+dx}}{\sqrt{e^{2c}(a^2+b^2)}+ae^c}\right)+dx\left(\log\left(\frac{be^{2c+dx}}{ae^c-\sqrt{e^{2c}(a^2+b^2)}}+1\right)+\log\left(\frac{be^{2c+dx}}{\sqrt{e^{2c}(a^2+b^2)}+ae^c}+1\right)\right.}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b*e - a*e*E^(c + d*x))*x)/(b*e - 2*a*e*E^(c + d*x) - b*e*E^(2*(c + d*x
```

```
[Out] -(d*x*(-(d*x) + Log[1 + (b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^2 + b^
2)*E^(2*c)])] + Log[1 + (b*E^(2*c + d*x))/(a*E^c + Sqrt[(a^2 + b^
2)*E^(2*c)])]) + PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c - Sqrt[(a^
2 + b^2)*E^(2*c)]))] + PolyLog[2, -((b*E^(2*c + d*x))/(a*E^c + Sq
rt[(a^2 + b^2)*E^(2*c)]))])/(2*d^2)
```

Maple [C] time = 0.054, size = 285, normalized size = 1.9

$$-\frac{x}{2d}\ln\left(-1\left(e^{2c}e^{dx}b+e^{c}a-\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)\left(-e^{c}a+\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)^{-1}\right)$$
$$-\frac{x}{2d}\ln\left(1\left(e^{2c}e^{dx}b+e^{c}a+\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)\left(e^{c}a+\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)^{-1}\right)$$
$$-\frac{1}{2d^{2}}dilog\left(-1\left(e^{2c}e^{dx}b+e^{c}a-\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)\left(-e^{c}a+\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)^{-1}\right)$$
$$-\frac{1}{2d^{2}}dilog\left(1\left(e^{2c}e^{dx}b+e^{c}a+\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)\left(e^{c}a+\sqrt{(e^{c})^{2}a^{2}+e^{2c}b^{2}}\right)^{-1}\right)+\frac{x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*e-a*e*exp(d*x+c))*x/(b*e-2*a*e*exp(d*x+c)-b*e*exp(2*d*x+2*c)),x)
```

```
[Out] -1/2/d*x*ln(-(exp(2*c)*exp(d*x)*b+exp(c)*a-(exp(c)^2*a^2+exp(2*c)
*b^2)^(1/2))/(-exp(c)*a+(exp(c)^2*a^2+exp(2*c)*b^2)^(1/2)))-1/2/d
*x*ln((exp(2*c)*exp(d*x)*b+exp(c)*a+(exp(c)^2*a^2+exp(2*c)*b^2)^(
1/2))/(exp(c)*a+(exp(c)^2*a^2+exp(2*c)*b^2)^(1/2)))-1/2/d^2*dilog
(-(exp(2*c)*exp(d*x)*b+exp(c)*a-(exp(c)^2*a^2+exp(2*c)*b^2)^(1/2)
)/(-exp(c)*a+(exp(c)^2*a^2+exp(2*c)*b^2)^(1/2)))-1/2/d^2*dilog((e
xp(2*c)*exp(d*x)*b+exp(c)*a+(exp(c)^2*a^2+exp(2*c)*b^2)^(1/2))/(e
xp(c)*a+(exp(c)^2*a^2+exp(2*c)*b^2)^(1/2)))+1/2*x^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(aee^{(dx+c)}-be\right)x}{bee^{(2\,dx+2\,c)}+2\,aee^{(dx+c)}-be}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*e*e^(d*x + c) - b*e)*x/(b*e*e^(2*d*x + 2*c) + 2*a*e*e^(d*x + c) - b*e
```

```
[Out] integrate((a*e*e^(d*x + c) - b*e)*x/(b*e*e^(2*d*x + 2*c) + 2*a*e*
e^(d*x + c) - b*e), x)
```

Fricas [A] time = 0.324853, size = 393, normalized size = 2.62

$$\frac{d^{2}x^{2}+c\log\left(2\,be^{(dx+c)}+2\,b\sqrt{\frac{a^{2}+b^{2}}{b^{2}}}+2\,a\right)+c\log\left(2\,be^{(dx+c)}-2\,b\sqrt{\frac{a^{2}+b^{2}}{b^{2}}}+2\,a\right)-(dx+c)\log\left(\frac{be^{(dx+c)}+b\sqrt{\frac{a^{2}+b^{2}}{b^{2}}}+a}{b\sqrt{\frac{a^{2}+b^{2}}{b^{2}}}+a}\right)-(dx}{2\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*e*e^(d*x + c) - b*e)*x/(b*e*e^(2*d*x + 2*c) + 2*a*e*e^(d*x + c) - b*e
```

```
[Out] 1/2*(d^2*x^2 + c*log(2*b*e^(d*x + c) + 2*b*sqrt((a^2 + b^2)/b^2)
+ 2*a) + c*log(2*b*e^(d*x + c) - 2*b*sqrt((a^2 + b^2)/b^2) + 2*a)
 - (d*x + c)*log((b*e^(d*x + c) + b*sqrt((a^2 + b^2)/b^2) + a)/(b
*sqrt((a^2 + b^2)/b^2) + a)) - (d*x + c)*log(-(b*e^(d*x + c) - b*
sqrt((a^2 + b^2)/b^2) + a)/(b*sqrt((a^2 + b^2)/b^2) - a)) - dilog
(-(b*e^(d*x + c) + b*sqrt((a^2 + b^2)/b^2) + a)/(b*sqrt((a^2 + b^
2)/b^2) + a) + 1) - dilog((b*e^(d*x + c) - b*sqrt((a^2 + b^2)/b^2
) + a)/(b*sqrt((a^2 + b^2)/b^2) - a) + 1))/d^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(ae^{c}e^{dx}-b\right)}{2ae^{c}e^{dx}+be^{2c}e^{2dx}-b}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*e-a*e*exp(d*x+c))*x/(b*e-2*a*e*exp(d*x+c)-b*e*exp(2*d*x+2*c)),x)
```

```
[Out] Integral(x*(a*exp(c)*exp(d*x) - b)/(2*a*exp(c)*exp(d*x) + b*exp(2
*c)*exp(2*d*x) - b), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(aee^{(dx+c)}-be\right)x}{bee^{(2\,dx+2\,c)}+2\,aee^{(dx+c)}-be}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*e*e^(d*x + c) - b*e)*x/(b*e*e^(2*d*x + 2*c) + 2*a*e*e^(d*x + c) - b*e
```

```
[Out] integrate((a*e*e^(d*x + c) - b*e)*x/(b*e*e^(2*d*x + 2*c) + 2*a*e*
e^(d*x + c) - b*e), x)
```

3.579 $\int F^{a+b\log(c+dx^n)}x^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{3}x^3F^a(c+dx^n)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{3}{n},-b\log(F),\frac{n+3}{n},-\frac{dx^n}{c}\right)$$

```
[Out] (F^a*x^3*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[3/n, -(b*Log[F]
), (3 + n)/n, -((d*x^n)/c)])/(3*(1 + (d*x^n)/c)^(b*Log[F]))
```

Rubi [A] time = 0.0955584, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$\frac{1}{3}x^3F^a(c+dx^n)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{3}{n},-b\log(F),\frac{n+3}{n},-\frac{dx^n}{c}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n])*x^2,x]
```

```
[Out] (F^a*x^3*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[3/n, -(b*Log[F]
), (3 + n)/n, -((d*x^n)/c)])/(3*(1 + (d*x^n)/c)^(b*Log[F]))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log(c+dx^n)}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n))*x**2,x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n))*x**2, x)
```

Mathematica [A] time = 0.415095, size = 0, normalized size = 0.

$$\int F^{a+b\log(c+dx^n)}x^2\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n])*x^2,x]
```

```
[Out] Integrate[F^(a + b*Log[c + d*x^n])*x^2, x]
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int F^{a+b\ln(c+dx^n)}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n))*x^2,x)

[Out] int(F^(a+b*ln(c+d*x^n))*x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(dx^n+c)+a}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)*x^2,x, algorithm="maxima")

[Out] integrate(F^(b*log(d*x^n + c) + a)*x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(F^{b\log(dx^n+c)+a}x^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)*x^2,x, algorithm="fricas")

[Out] integral(F^(b*log(d*x^n + c) + a)*x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n))*x**2,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(dx^n+c)+a}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)*x^2,x, algorithm="giac")

[Out] integrate(F^(b*log(d*x^n + c) + a)*x^2, x)
```

3.580 $\int F^{a+b\log(c+dx^n)}x\,dx$

Optimal. Leaf size=65

$$\frac{1}{2}x^2F^a\left(c+dx^n\right)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{2}{n},-b\log(F),\frac{n+2}{n},-\frac{dx^n}{c}\right)$$

```
[Out] (F^a*x^2*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[2/n, -(b*Log[F]
), (2 + n)/n, -((d*x^n)/c)])/(2*(1 + (d*x^n)/c)^(b*Log[F]))
```

Rubi [A] time = 0.0673641, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{1}{2}x^2F^a\left(c+dx^n\right)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{2}{n},-b\log(F),\frac{n+2}{n},-\frac{dx^n}{c}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n])*x,x]
```

```
[Out] (F^a*x^2*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[2/n, -(b*Log[F]
), (2 + n)/n, -((d*x^n)/c)])/(2*(1 + (d*x^n)/c)^(b*Log[F]))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log(c+dx^n)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n))*x,x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n))*x, x)
```

Mathematica [A] time = 0.239701, size = 0, normalized size = 0.

$$\int F^{a+b\log(c+dx^n)}x\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n])*x,x]
```

```
[Out] Integrate[F^(a + b*Log[c + d*x^n])*x, x]
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int F^{a+b\ln(c+dx^n)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n))*x,x)

[Out] int(F^(a+b*ln(c+d*x^n))*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(dx^n+c)+a}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)*x,x, algorithm="maxima")

[Out] integrate(F^(b*log(d*x^n + c) + a)*x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(F^{b\log(dx^n+c)+a}x, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)*x,x, algorithm="fricas")

[Out] integral(F^(b*log(d*x^n + c) + a)*x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n))*x,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(dx^n+c)+a}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)*x,x, algorithm="giac")

[Out] integrate(F^(b*log(d*x^n + c) + a)*x, x)
```

3.581 $\int F^{a+b\log(c+dx^n)}\,dx$

Optimal. Leaf size=56

$$xF^a\left(c+dx^n\right)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{1}{n},-b\log(F),\frac{1}{n}+1,-\frac{dx^n}{c}\right)$$

```
[Out] (F^a*x*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[n^(-1), -(b*Log[F
]), 1 + n^(-1), -((d*x^n)/c)])/(1 + (d*x^n)/c)^(b*Log[F])
```

Rubi [A] time = 0.0396952, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$xF^a\left(c+dx^n\right)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{1}{n},-b\log(F),\frac{1}{n}+1,-\frac{dx^n}{c}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n]),x]
```

```
[Out] (F^a*x*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[n^(-1), -(b*Log[F
]), 1 + n^(-1), -((d*x^n)/c)])/(1 + (d*x^n)/c)^(b*Log[F])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log\left(c+dx^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n)),x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n)), x)
```

Mathematica [A] time = 0.0330856, size = 0, normalized size = 0.

$$\int F^{a+b\log(c+dx^n)}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n]),x]
```

```
[Out] Integrate[F^(a + b*Log[c + d*x^n]), x]
```

Maple [F] time = 0.098, size = 0, normalized size = 0.

$$\int F^{a+b\ln(c+dx^n)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n)),x)

[Out] int(F^(a+b*ln(c+d*x^n)),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(dx^n+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a),x, algorithm="maxima")

[Out] integrate(F^(b*log(d*x^n + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(F^{b\log(dx^n+c)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a),x, algorithm="fricas")

[Out] integral(F^(b*log(d*x^n + c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n)),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(dx^n+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a),x, algorithm="giac")

[Out] integrate(F^(b*log(d*x^n + c) + a), x)
```

3.582 $\int \frac{F^{a+b\log(c+dx^n)}}{x}\,dx$

Optimal. Leaf size=57

$$-\frac{F^a (c+dx^n)^{b\log(F)+1}\,\text{Hypergeometric2F1}\left(1, b\log(F)+1, b\log(F)+2, \frac{dx^n}{c}+1\right)}{cn(b\log(F)+1)}$$

```
[Out] -((F^a*(c + d*x^n)^(1 + b*Log[F])*Hypergeometric2F1[1, 1 + b*Log[
F], 2 + b*Log[F], 1 + (d*x^n)/c])/(c*n*(1 + b*Log[F])))
```

Rubi [A] time = 0.109915, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$-\frac{F^a (c+dx^n)^{b\log(F)+1}\,\text{Hypergeometric2F1}\left(1, b\log(F)+1, b\log(F)+2, \frac{dx^n}{c}+1\right)}{cn(b\log(F)+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n])/x,x]
```

```
[Out] -((F^a*(c + d*x^n)^(1 + b*Log[F])*Hypergeometric2F1[1, 1 + b*Log[
F], 2 + b*Log[F], 1 + (d*x^n)/c])/(c*n*(1 + b*Log[F])))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int^{\left(\left(\left(\left(\left(\left(\left(\left(\left(\left((x^n)^n\right)^n\right)^n\right)^n\right)^n\right)^n\right)^n\right)^n\right)^n\right)^n\right)^n} \frac{F^{a+b\log(c+dx^n)}}{x}\,dx}{n^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n))/x,x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n))/x, (x, ((((((((((x**n)**n)**n
)**n)**n)**n)**n)**n)**n)**n)**n))/n**11
```

Mathematica [A] time = 0.0889943, size = 50, normalized size = 0.88

$$-\frac{F^{a+b\log(c+dx^n)}\left(\text{Hypergeometric2F1}\left(1, b\log(F), b\log(F)+1, \frac{dx^n}{c}+1\right)-1\right)}{bn\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n])/x,x]
```

```
[Out] -((F^(a + b*Log[c + d*x^n])*(-1 + Hypergeometric2F1[1, b*Log[F],
1 + b*Log[F], 1 + (d*x^n)/c]))/(b*n*Log[F]))
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int \frac{F^{a+b\ln(c+dx^n)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n))/x,x)

[Out] int(F^(a+b*ln(c+d*x^n))/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b\log(dx^n+c)+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x,x, algorithm="maxima")

[Out] integrate(F^(b*log(d*x^n + c) + a)/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{b\log(dx^n+c)+a}}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x,x, algorithm="fricas")

[Out] integral(F^(b*log(d*x^n + c) + a)/x, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n))/x,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b\log(dx^n+c)+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x,x, algorithm="giac")

[Out] integrate(F^(b*log(d*x^n + c) + a)/x, x)
```

3.583 $\int \frac{F^{a+b\log(c+dx^n)}}{x^2}\,dx$

Optimal. Leaf size=66

$$-\frac{F^a (c+dx^n)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(-\frac{1}{n},-b\log(F),-\frac{1-n}{n},-\frac{dx^n}{c}\right)}{x}$$

```
[Out] -((F^a*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[-n^(-1), -(b*Log[
F]), -((1 - n)/n), -((d*x^n)/c)])/(x*(1 + (d*x^n)/c)^(b*Log[F])))
```

Rubi [A] time = 0.0865432, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$-\frac{F^a (c+dx^n)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(-\frac{1}{n},-b\log(F),-\frac{1-n}{n},-\frac{dx^n}{c}\right)}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n])/x^2,x]
```

```
[Out] -((F^a*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[-n^(-1), -(b*Log[
F]), -((1 - n)/n), -((d*x^n)/c)])/(x*(1 + (d*x^n)/c)^(b*Log[F])))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log(c+dx^n)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n))/x**2,x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n))/x**2, x)
```

Mathematica [A] time = 0.244705, size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log(c+dx^n)}}{x^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n])/x^2,x]
```

```
[Out] Integrate[F^(a + b*Log[c + d*x^n])/x^2, x]
```

Maple [F] time = 0.062, size = 0, normalized size = 0.

$$\int \frac{F^{a+b\ln(c+dx^n)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n))/x^2,x)

[Out] int(F^(a+b*ln(c+d*x^n))/x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b \log(dx^n+c)+a}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x^2,x, algorithm="maxima")

[Out] integrate(F^(b*log(d*x^n + c) + a)/x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{b \log(dx^n+c)+a}}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x^2,x, algorithm="fricas")

[Out] integral(F^(b*log(d*x^n + c) + a)/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n))/x**2,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b \log(dx^n+c)+a}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x^2,x, algorithm="giac")

[Out] integrate(F^(b*log(d*x^n + c) + a)/x^2, x)
```

3.584 $\int \frac{F^{a+b\log(c+dx^n)}}{x^3}\,dx$

Optimal. Leaf size=68

$$-\frac{F^a(c+dx^n)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(-\frac{2}{n},-b\log(F),-\frac{2-n}{n},-\frac{dx^n}{c}\right)}{2x^2}$$

```
[Out] -(F^a*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[-2/n, -(b*Log[F]),
 -((2 - n)/n), -((d*x^n)/c)])/(2*x^2*(1 + (d*x^n)/c)^(b*Log[F]))
```

Rubi [A] time = 0.0865912, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$-\frac{F^a(c+dx^n)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(-\frac{2}{n},-b\log(F),-\frac{2-n}{n},-\frac{dx^n}{c}\right)}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n])/x^3,x]
```

```
[Out] -(F^a*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[-2/n, -(b*Log[F]),
 -((2 - n)/n), -((d*x^n)/c)])/(2*x^2*(1 + (d*x^n)/c)^(b*Log[F]))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log(c+dx^n)}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n))/x**3,x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n))/x**3, x)
```

Mathematica [A] time = 0.240833, size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log(c+dx^n)}}{x^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n])/x^3,x]
```

```
[Out] Integrate[F^(a + b*Log[c + d*x^n])/x^3, x]
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int \frac{F^{a+b\ln(c+dx^n)}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n))/x^3,x)
```

```
[Out] int(F^(a+b*ln(c+d*x^n))/x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b\log(dx^n+c)+a}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x^3,x, algorithm="maxima")
```

```
[Out] integrate(F^(b*log(d*x^n + c) + a)/x^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{F^{b\log(dx^n+c)+a}}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x^3,x, algorithm="fricas")
```

```
[Out] integral(F^(b*log(d*x^n + c) + a)/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n))/x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b\log(dx^n+c)+a}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(d*x^n + c) + a)/x^3,x, algorithm="giac")
```

```
[Out] integrate(F^(b*log(d*x^n + c) + a)/x^3, x)
```

3.585 $\int F^{a+b\log(c+dx^n)}(dx)^m\,dx$

Optimal. Leaf size=77

$$\frac{F^a(dx)^{m+1}\left(c+dx^n\right)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{m+1}{n},-b\log(F),\frac{m+n+1}{n},-\frac{dx^n}{c}\right)}{d(m+1)}$$

```
[Out] (F^a*(d*x)^(1 + m)*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[(1 +
m)/n, -(b*Log[F]), (1 + m + n)/n, -((d*x^n)/c)])/(d*(1 + m)*(1 +
(d*x^n)/c)^(b*Log[F]))
```

Rubi [A] time = 0.10707, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{F^a(dx)^{m+1}\left(c+dx^n\right)^{b\log(F)}\left(\frac{dx^n}{c}+1\right)^{-b\log(F)}\text{Hypergeometric2F1}\left(\frac{m+1}{n},-b\log(F),\frac{m+n+1}{n},-\frac{dx^n}{c}\right)}{d(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c + d*x^n])*(d*x)^m,x]
```

```
[Out] (F^a*(d*x)^(1 + m)*(c + d*x^n)^(b*Log[F])*Hypergeometric2F1[(1 +
m)/n, -(b*Log[F]), (1 + m + n)/n, -((d*x^n)/c)])/(d*(1 + m)*(1 +
(d*x^n)/c)^(b*Log[F]))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log{(c+dx^n)}}(dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c+d*x**n))*(d*x)**m,x)
```

```
[Out] Integral(F**(a + b*log(c + d*x**n))*(d*x)**m, x)
```

Mathematica [A] time = 0.286473, size = 0, normalized size = 0.

$$\int F^{a+b\log(c+dx^n)}(dx)^m\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[F^(a + b*Log[c + d*x^n])*(d*x)^m,x]
```

```
[Out] Integrate[F^(a + b*Log[c + d*x^n])*(d*x)^m, x]
```

Maple [F] time = 0.108, size = 0, normalized size = 0.

$$\int F^{a+b\ln(c+dx^n)}(dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c+d*x^n))*(d*x)^m,x)
```

```
[Out] int(F^(a+b*ln(c+d*x^n))*(d*x)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx)^m F^{b\log(dx^n+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^(b*log(d*x^n + c) + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x)^m*F^(b*log(d*x^n + c) + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((dx)^m F^{b\log(dx^n+c)+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^(b*log(d*x^n + c) + a),x, algorithm="fricas")
```

```
[Out] integral((d*x)^m*F^(b*log(d*x^n + c) + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c+d*x**n))*(d*x)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx)^m F^{b\log(dx^n+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^(b*log(d*x^n + c) + a),x, algorithm="giac")
```

```
[Out] integrate((d*x)^m*F^(b*log(d*x^n + c) + a), x)
```

3.586 $\int F^{a+b\log^2(cx^n)}x^2\,dx$

Optimal. Leaf size=89

$$\frac{\sqrt{\pi}x^3F^a\left(cx^n\right)^{-3/n}e^{-\frac{9}{4bn^2\log(F)}}\text{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+3}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*x^3*Erfi[(3 + 2*b*n*Log[F]*Log[c*x^n])/(2*Sqrt[b]*n
*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(9/(4*b*n^2*Log[F]))*n*(c*x^n)^(3/n
)*Sqrt[Log[F]])
```

Rubi [A] time = 0.15163, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{\sqrt{\pi}x^3F^a\left(cx^n\right)^{-3/n}e^{-\frac{9}{4bn^2\log(F)}}\text{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+3}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2)*x^2,x]
```

```
[Out] (F^a*Sqrt[Pi]*x^3*Erfi[(3 + 2*b*n*Log[F]*Log[c*x^n])/(2*Sqrt[b]*n
*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(9/(4*b*n^2*Log[F]))*n*(c*x^n)^(3/n
)*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log(cx^n)^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2)*x**2,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)*x**2, x)
```

Mathematica [A] time = 0.123557, size = 89, normalized size = 1.

$$\frac{\sqrt{\pi}x^3F^a\left(cx^n\right)^{-3/n}e^{-\frac{9}{4bn^2\log(F)}}\text{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+3}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2)*x^2,x]
```

```
[Out] (F^a*Sqrt[Pi]*x^3*Erfi[(3 + 2*b*n*Log[F]*Log[c*x^n])/(2*Sqrt[b]*n
*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(9/(4*b*n^2*Log[F]))*n*(c*x^n)^(3/n
)*Sqrt[Log[F]])
```

Maple [F] time = 0.303, size = 0, normalized size = 0.

$$\int F^{a+b(\ln(cx^n))^2} x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2)*x^2,x)
```

```
[Out] int(F^(a+b*ln(c*x^n)^2)*x^2,x)
```

Maxima [A] time = 0.911358, size = 115, normalized size = 1.29

$$\frac{\sqrt{\pi} F^{b\log(c)^2+a} \operatorname{erf}\left(\sqrt{-b\log(F)}n\log(x) - \frac{2\,bn\log(F)\log(c)+3}{2\sqrt{-b\log(F)}n}\right) e^{\left(-\frac{(2\,bn\log(F)\log(c)+3)^2}{4\,bn^2\log(F)}\right)}}{2\sqrt{-b\log(F)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)*x^2,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*erf(sqrt(-b*log(F))*n*log(x) - 1/
2*(2*b*n*log(F)*log(c) + 3)/(sqrt(-b*log(F))*n))*e^(-1/4*(2*b*n*l
og(F)*log(c) + 3)^2/(b*n^2*log(F)))/(sqrt(-b*log(F))*n)
```

Fricas [A] time = 0.420169, size = 130, normalized size = 1.46

$$\frac{\sqrt{\pi} bn \operatorname{erf}\left(\frac{(2\,bn^2\log(F)\log(x)+2\,bn\log(F)\log(c)+3)\sqrt{-bn^2\log(F)}}{2\,bn^2\log(F)}\right) e^{\left(\frac{4\,abn^2\log(F)^2-12\,bn\log(F)\log(c)-9}{4\,bn^2\log(F)}\right)} \log(F)}{2\sqrt{-bn^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b*n^2*log(F)*log(x) + 2*b*n*log(F)*lo
g(c) + 3)*sqrt(-b*n^2*log(F))/(b*n^2*log(F)))*e^(1/4*(4*a*b*n^2*l
og(F)^2 - 12*b*n*log(F)*log(c) - 9)/(b*n^2*log(F)))*log(F)/sqrt(-
b*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2)*x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(cx^n)^2+a}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)*x^2,x, algorithm="giac")
```

```
[Out] integrate(F^(b*log(c*x^n)^2 + a)*x^2, x)
```

3.587 $\int F^{a+b\log^2(cx^n)}x\,dx$

Optimal. Leaf size=83

$$\frac{\sqrt{\pi}x^2F^a\left(cx^n\right)^{-2/n}e^{-\frac{1}{bn^2\log(F)}}\text{Erfi}\left(\frac{bn\log(F)\log(cx^n)+1}{\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*x^2*Erfi[(1 + b*n*Log[F]*Log[c*x^n])/(Sqrt[b]*n*Sqr
t[Log[F]])])/(2*Sqrt[b]*E^(1/(b*n^2*Log[F]))*n*(c*x^n)^(2/n)*Sqrt
[Log[F]])
```

Rubi [A] time = 0.121736, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{\sqrt{\pi}x^2F^a\left(cx^n\right)^{-2/n}e^{-\frac{1}{bn^2\log(F)}}\text{Erfi}\left(\frac{bn\log(F)\log(cx^n)+1}{\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2)*x,x]
```

```
[Out] (F^a*Sqrt[Pi]*x^2*Erfi[(1 + b*n*Log[F]*Log[c*x^n])/(Sqrt[b]*n*Sqr
t[Log[F]])])/(2*Sqrt[b]*E^(1/(b*n^2*Log[F]))*n*(c*x^n)^(2/n)*Sqrt
[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log\left(cx^n\right)^2}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2)*x,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)*x, x)
```

Mathematica [A] time = 0.107045, size = 83, normalized size = 1.

$$\frac{\sqrt{\pi}x^2F^a\left(cx^n\right)^{-2/n}e^{-\frac{1}{bn^2\log(F)}}\text{Erfi}\left(\frac{bn\log(F)\log(cx^n)+1}{\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2)*x,x]
```

```
[Out] (F^a*Sqrt[Pi]*x^2*Erfi[(1 + b*n*Log[F]*Log[c*x^n])/(Sqrt[b]*n*Sqr
t[Log[F]])])/(2*Sqrt[b]*E^(1/(b*n^2*Log[F]))*n*(c*x^n)^(2/n)*Sqrt
[Log[F]])
```

Maple [F] time = 0.155, size = 0, normalized size = 0.

$$\int F^{a+b(\ln(c x^n))^2} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2)*x,x)
```

```
[Out] int(F^(a+b*ln(c*x^n)^2)*x,x)
```

Maxima [A] time = 0.84418, size = 112, normalized size = 1.35

$$\frac{\sqrt{\pi} F^{b \log(c)^2 + a} \operatorname{erf}\left(\sqrt{-b \log(F)} n \log(x) - \frac{b n \log(F) \log(c) + 1}{\sqrt{-b \log(F)} n}\right) e^{\left(-\frac{(b n \log(F) \log(c) + 1)^2}{b n^2 \log(F)}\right)}}{2 \sqrt{-b \log(F)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)*x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*erf(sqrt(-b*log(F))*n*log(x) - (b
*n*log(F)*log(c) + 1)/(sqrt(-b*log(F))*n))*e^(-(b*n*log(F)*log(c)
 + 1)^2/(b*n^2*log(F)))/(sqrt(-b*log(F))*n)
```

Fricas [A] time = 0.247329, size = 123, normalized size = 1.48

$$\frac{\sqrt{\pi} b n \operatorname{erf}\left(\frac{(b n^2 \log(F) \log(x) + b n \log(F) \log(c) + 1) \sqrt{-b n^2 \log(F)}}{b n^2 \log(F)}\right) e^{\left(\frac{a b n^2 \log(F)^2 - 2 b n \log(F) \log(c) - 1}{b n^2 \log(F)}\right)} \log(F)}{2 \sqrt{-b n^2 \log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)*x,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf((b*n^2*log(F)*log(x) + b*n*log(F)*log(c) + 1
)*sqrt(-b*n^2*log(F))/(b*n^2*log(F)))*e^((a*b*n^2*log(F)^2 - 2*b*
n*log(F)*log(c) - 1)/(b*n^2*log(F)))*log(F)/sqrt(-b*n^2*log(F))
```

Sympy [A] time = 83.0068, size = 199, normalized size = 2.4

$$- \frac{F^{a} F^{b \log(c)^{2}} F^{b n^{2} \log(x)^{2}} F^{2 b n \log(c) \log(x)} b n^{2} x^{2} \log(F) \log(x)}{2} + \frac{F^{a} F^{b \log(c)^{2}} F^{b n^{2} \log(x)^{2}} F^{2 b n \log(c) \log(x)} b n^{2} x^{2} \log(F)}{4} - \frac{F^{a} F^{b \log(c)^{2}} F^{b n^{2} \log(x)^{2}} F^{2 b n \log(c) \log(x)} b n x^{2} \log(F) \log(c)}{2} + \frac{F^{a} F^{b \log(c)^{2}} F^{b n^{2} \log(x)^{2}} F^{2 b n \log(c) \log(x)} x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2)*x,x)
```

```
[Out] -F**a*F**(b*log(c)**2)*F**(b*n**2*log(x)**2)*F**(2*b*n*log(c)*log
(x))*b*n**2*x**2*log(F)*log(x)/2 + F**a*F**(b*log(c)**2)*F**(b*n*
*2*log(x)**2)*F**(2*b*n*log(c)*log(x))*b*n**2*x**2*log(F)/4 - F**
a*F**(b*log(c)**2)*F**(b*n**2*log(x)**2)*F**(2*b*n*log(c)*log(x))
*b*n*x**2*log(F)*log(c)/2 + F**a*F**(b*log(c)**2)*F**(b*n**2*log(
x)**2)*F**(2*b*n*log(c)*log(x))*x**2/2
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{b\log(cx^n)^2+a}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)*x,x, algorithm="giac")
```

```
[Out] integrate(F^(b*log(c*x^n)^2 + a)*x, x)
```

3.588 $\int F^{a+b\log^2(cx^n)}\,dx$

Optimal. Leaf size=87

$$\frac{\sqrt{\pi}xF^a\left(cx^n\right)^{-1/n}e^{-\frac{1}{4bn^2\log(F)}}\text{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+1}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*x*Erfi[(1 + 2*b*n*Log[F]*Log[c*x^n])/(2*Sqrt[b]*n*S
qrt[Log[F]])])/(2*Sqrt[b]*E^(1/(4*b*n^2*Log[F]))*n*(c*x^n)^n^(-1)
*Sqrt[Log[F]])
```

Rubi [A] time = 0.10848, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214

$$\frac{\sqrt{\pi}xF^a\left(cx^n\right)^{-1/n}e^{-\frac{1}{4bn^2\log(F)}}\text{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+1}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2),x]
```

```
[Out] (F^a*Sqrt[Pi]*x*Erfi[(1 + 2*b*n*Log[F]*Log[c*x^n])/(2*Sqrt[b]*n*S
qrt[Log[F]])])/(2*Sqrt[b]*E^(1/(4*b*n^2*Log[F]))*n*(c*x^n)^n^(-1)
*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log(cx^n)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2),x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2), x)
```

Mathematica [A] time = 0.0851696, size = 87, normalized size = 1.

$$\frac{\sqrt{\pi}xF^a\left(cx^n\right)^{-1/n}e^{-\frac{1}{4bn^2\log(F)}}\text{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+1}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2),x]
```

```
[Out] (F^a*Sqrt[Pi]*x*Erfi[(1 + 2*b*n*Log[F]*Log[c*x^n])/(2*Sqrt[b]*n*S
qrt[Log[F]])])/(2*Sqrt[b]*E^(1/(4*b*n^2*Log[F]))*n*(c*x^n)^n^(-1)
*Sqrt[Log[F]])
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int F^{a+b(\ln(c x^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2),x)
```

```
[Out] int(F^(a+b*ln(c*x^n)^2),x)
```

Maxima [A] time = 0.85799, size = 115, normalized size = 1.32

$$\frac{\sqrt{\pi}F^{b\log(c)^2+a}\,\mathrm{erf}\left(\sqrt{-b\log(F)}n\log(x)-\frac{2\,bn\log(F)\log(c)+1}{2\sqrt{-b\log(F)}n}\right)e^{\left(-\frac{(2\,bn\log(F)\log(c)+1)^2}{4\,bn^2\log(F)}\right)}}{2\sqrt{-b\log(F)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*erf(sqrt(-b*log(F))*n*log(x) - 1/
2*(2*b*n*log(F)*log(c) + 1)/(sqrt(-b*log(F))*n))*e^(-1/4*(2*b*n*l
og(F)*log(c) + 1)^2/(b*n^2*log(F)))/(sqrt(-b*log(F))*n)
```

Fricas [A] time = 0.264641, size = 130, normalized size = 1.49

$$\frac{\sqrt{\pi}bn\,\mathrm{erf}\left(\frac{(2\,bn^2\log(F)\log(x)+2\,bn\log(F)\log(c)+1)\sqrt{-bn^2\log(F)}}{2\,bn^2\log(F)}\right)e^{\left(\frac{4\,abn^2\log(F)^2-4\,bn\log(F)\log(c)-1}{4\,bn^2\log(F)}\right)}\log(F)}{2\sqrt{-bn^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b*n^2*log(F)*log(x) + 2*b*n*log(F)*lo
g(c) + 1)*sqrt(-b*n^2*log(F))/(b*n^2*log(F)))*e^(1/4*(4*a*b*n^2*l
og(F)^2 - 4*b*n*log(F)*log(c) - 1)/(b*n^2*log(F)))*log(F)/sqrt(-b
*n^2*log(F))
```

Sympy [A] time = 10.0112, size = 190, normalized size = 2.18

$$-2F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}bn^2x\log(F)\log(x) + 2F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}bn^2x\log(F) - 2F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}bnx\log(F)\log(c) + F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2),x)
```

```
[Out] -2*F**a*F**(b*log(c)**2)*F**(b*n**2*log(x)**2)*F**(2*b*n*log(c)*l
og(x))*b*n**2*x*log(F)*log(x) + 2*F**a*F**(b*log(c)**2)*F**(b*n**
```

```
2*log(x)**2)*F**(2*b*n*log(c)*log(x))*b*n**2*x*log(F) - 2*F**a*F*
*(b*log(c)**2)*F**(b*n**2*log(x)**2)*F**(2*b*n*log(c)*log(x))*b*n
*x*log(F)*log(c) + F**a*F**(b*log(c)**2)*F**(b*n**2*log(x)**2)*F*
*(2*b*n*log(c)*log(x))*x
```

GIAC/XCAS [A] time = 0.240913, size = 113, normalized size = 1.3

$$-\frac{\sqrt{\pi}\,\operatorname{erf}\left(-\sqrt{-b\ln\left(F\right)}n\ln\left(x\right)-\sqrt{-b\ln\left(F\right)}\ln\left(c\right)-\frac{\sqrt{-b\ln(F)}}{2\,bn\ln(F)}\right)e^{\left(a\ln(F)-\frac{\ln(c)}{n}-\frac{1}{4\,bn^{2}\ln(F)}\right)}}{2\,\sqrt{-b\ln\left(F\right)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(pi)*erf(-sqrt(-b*ln(F))*n*ln(x) - sqrt(-b*ln(F))*ln(c)
- 1/2*sqrt(-b*ln(F))/(b*n*ln(F)))*e^(a*ln(F) - ln(c)/n - 1/4/(b*n
^2*ln(F)))/(sqrt(-b*ln(F))*n)
```

3.589 $\int \frac{F^{a+b\log^2(cx^n)}}{x}\,dx$

Optimal. Leaf size=45

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}\log\left(cx^n\right)\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*Sqrt[Log[F]]*Log[c*x^n]])/(2*Sqrt[b]*n
*Sqrt[Log[F]])
```

Rubi [A] time = 0.0722003, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}\log\left(cx^n\right)\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2)/x,x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*Sqrt[Log[F]]*Log[c*x^n]])/(2*Sqrt[b]*n
*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log\left(cx^n\right)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2)/x,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)/x, x)
```

Mathematica [A] time = 0.0089944, size = 45, normalized size = 1.

$$\frac{\sqrt{\pi}F^a\text{Erfi}\left(\sqrt{b}\sqrt{\log(F)}\log\left(cx^n\right)\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2)/x,x]
```

```
[Out] (F^a*Sqrt[Pi]*Erfi[Sqrt[b]*Sqrt[Log[F]]*Log[c*x^n]])/(2*Sqrt[b]*n
*Sqrt[Log[F]])
```

Maple [F] time = 180., size = 0, normalized size = 0.

$$\int \frac{F^{a+b(\ln(cx^n))^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2)/x,x)
```

```
[Out] int(F^(a+b*ln(c*x^n)^2)/x,x)
```

Maxima [A] time = 0.849054, size = 84, normalized size = 1.87

$$\frac{\sqrt{\pi}F^{b\log(c)^2+a}\,\mathrm{erf}\left(-\frac{b\log(F)\log(c)}{\sqrt{-b\log(F)}}+\sqrt{-b\log(F)}n\log(x)\right)}{2\sqrt{-b\log(F)}F^{b\log(c)^2}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*erf(-b*log(F)*log(c)/sqrt(-b*log(
F)) + sqrt(-b*log(F))*n*log(x))/(sqrt(-b*log(F))*F^(b*log(c)^2)*n
)
```

Fricas [A] time = 0.263826, size = 59, normalized size = 1.31

$$\frac{\sqrt{\pi}F^{a}bn\,\mathrm{erf}\left(\frac{\sqrt{-bn^2\log(F)}(n\log(x)+\log(c))}{n}\right)\log(F)}{2\sqrt{-bn^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*F^a*b*n*erf(sqrt(-b*n^2*log(F))*(n*log(x) + log(c))/
n)*log(F)/sqrt(-b*n^2*log(F))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{a+b\log(cx^n)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2)/x,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{b\log(cx^n)^2+a}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x,x, algorithm="giac")

[Out] integrate(F^(b*log(c*x^n)^2 + a)/x, x)
```

3.590 $\int \frac{F^{a+b\log^2(cx^n)}}{x^2}\,dx$

Optimal. Leaf size=87

$$-\frac{\sqrt{\pi}F^a\left(cx^n\right)^{\frac{1}{n}}e^{-\frac{1}{4bn^2\log(F)}}\operatorname{Erfi}\left(\frac{1-2bn\log(F)\log(cx^n)}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}nx\sqrt{\log(F)}}$$

```
[Out] -(F^a*Sqrt[Pi]*(c*x^n)^n^(-1)*Erfi[(1 - 2*b*n*Log[F]*Log[c*x^n])/
(2*Sqrt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(1/(4*b*n^2*Log[F]))*n*
x*Sqrt[Log[F]])
```

Rubi [A] time = 0.100257, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{\sqrt{\pi}F^a\left(cx^n\right)^{\frac{1}{n}}e^{-\frac{1}{4bn^2\log(F)}}\operatorname{Erfi}\left(\frac{1-2bn\log(F)\log(cx^n)}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}nx\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2)/x^2,x]
```

```
[Out] -(F^a*Sqrt[Pi]*(c*x^n)^n^(-1)*Erfi[(1 - 2*b*n*Log[F]*Log[c*x^n])/
(2*Sqrt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(1/(4*b*n^2*Log[F]))*n*
x*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log(cx^n)^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2)/x**2,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)/x**2, x)
```

Mathematica [A] time = 0.111284, size = 87, normalized size = 1.

$$\frac{\sqrt{\pi}F^a\left(cx^n\right)^{\frac{1}{n}}e^{-\frac{1}{4bn^2\log(F)}}\operatorname{Erfi}\left(\frac{2bn\log(F)\log(cx^n)-1}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}nx\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2)/x^2,x]
```

```
[Out] (F^a*Sqrt[Pi]*(c*x^n)^n^(-1)*Erfi[(-1 + 2*b*n*Log[F]*Log[c*x^n])/
(2*Sqrt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(1/(4*b*n^2*Log[F]))*n*
x*Sqrt[Log[F]])
```

Maple [F] time = 0.184, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(\ln(cx^n))^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2)/x^2,x)
```

```
[Out] int(F^(a+b*ln(c*x^n)^2)/x^2,x)
```

Maxima [A] time = 0.890079, size = 115, normalized size = 1.32

$$\frac{\sqrt{\pi}F^{b\log(c)^2+a}\,\mathrm{erf}\left(\sqrt{-b\log(F)}n\log(x)-\frac{2\,bn\log(F)\log(c)-1}{2\sqrt{-b\log(F)}n}\right)e^{\left(-\frac{(2\,bn\log(F)\log(c)-1)^2}{4\,bn^2\log(F)}\right)}}{2\sqrt{-b\log(F)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*erf(sqrt(-b*log(F))*n*log(x) - 1/
2*(2*b*n*log(F)*log(c) - 1)/(sqrt(-b*log(F))*n))*e^(-1/4*(2*b*n*l
og(F)*log(c) - 1)^2/(b*n^2*log(F)))/(sqrt(-b*log(F))*n)
```

Fricas [A] time = 0.252334, size = 130, normalized size = 1.49

$$\frac{\sqrt{\pi}bn\,\mathrm{erf}\left(\frac{(2\,bn^2\log(F)\log(x)+2\,bn\log(F)\log(c)-1)\sqrt{-bn^2\log(F)}}{2\,bn^2\log(F)}\right)e^{\left(\frac{4\,abn^2\log(F)^2+4\,bn\log(F)\log(c)-1}{4\,bn^2\log(F)}\right)}\log(F)}{2\sqrt{-bn^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b*n^2*log(F)*log(x) + 2*b*n*log(F)*lo
g(c) - 1)*sqrt(-b*n^2*log(F))/(b*n^2*log(F)))*e^(1/4*(4*a*b*n^2*l
og(F)^2 + 4*b*n*log(F)*log(c) - 1)/(b*n^2*log(F)))*log(F)/sqrt(-b
*n^2*log(F))
```

Sympy [A] time = 88.4593, size = 192, normalized size = 2.21

$$-\frac{2F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}bn^2\log(F)\log(x)}{x}-\frac{2F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}bn^2\log(F)}{x}-\frac{2F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}bn\log(F)\log(c)}{x}-\frac{F^aF^{b\log(c)^2}F^{bn^2\log(x)^2}F^{2bn\log(c)\log(x)}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2)/x**2,x)
```

```
[Out] -2*F**a*F**(b*log(c)**2)*F**(b*n**2*log(x)**2)*F**(2*b*n*log(c)*l
og(x))*b*n**2*log(F)*log(x)/x - 2*F**a*F**(b*log(c)**2)*F**(b*n**
2*log(x)**2)*F**(2*b*n*log(c)*log(x))*b*n**2*log(F)/x - 2*F**a*F*
*(b*log(c)**2)*F**(b*n**2*log(x)**2)*F**(2*b*n*log(c)*log(x))*b*n
*log(F)*log(c)/x - F**a*F**(b*log(c)**2)*F**(b*n**2*log(x)**2)*F*
*(2*b*n*log(c)*log(x))/x
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b\log(cx^n)^2+a}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x^2,x, algorithm="giac")
```

```
[Out] integrate(F^(b*log(c*x^n)^2 + a)/x^2, x)
```

3.591 $\int \frac{F^{a+b\log^2(cx^n)}}{x^3}\,dx$

Optimal. Leaf size=84

$$-\frac{\sqrt{\pi}F^a\left(cx^n\right)^{2/n}e^{-\frac{1}{bn^2\log(F)}}\text{Erfi}\left(\frac{1-bn\log(F)\log(cx^n)}{\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}nx^2\sqrt{\log(F)}}$$

```
[Out] -(F^a*Sqrt[Pi]*(c*x^n)^(2/n)*Erfi[(1 - b*n*Log[F]*Log[c*x^n])/(Sq
rt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(1/(b*n^2*Log[F]))*n*x^2*Sqr
t[Log[F]])
```

Rubi [A] time = 0.100316, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$-\frac{\sqrt{\pi}F^a\left(cx^n\right)^{2/n}e^{-\frac{1}{bn^2\log(F)}}\text{Erfi}\left(\frac{1-bn\log(F)\log(cx^n)}{\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}nx^2\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2)/x^3,x]
```

```
[Out] -(F^a*Sqrt[Pi]*(c*x^n)^(2/n)*Erfi[(1 - b*n*Log[F]*Log[c*x^n])/(Sq
rt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(1/(b*n^2*Log[F]))*n*x^2*Sqr
t[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{a+b\log(cx^n)^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2)/x**3,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)/x**3, x)
```

Mathematica [A] time = 0.112764, size = 83, normalized size = 0.99

$$\frac{\sqrt{\pi}F^a\left(cx^n\right)^{2/n}e^{-\frac{1}{bn^2\log(F)}}\text{Erfi}\left(\frac{bn\log(F)\log(cx^n)-1}{\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}nx^2\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2)/x^3,x]
```

```
[Out] (F^a*Sqrt[Pi]*(c*x^n)^(2/n)*Erfi[(-1 + b*n*Log[F]*Log[c*x^n])/(Sq
rt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(1/(b*n^2*Log[F]))*n*x^2*Sqr
t[Log[F]])
```

Maple [F] time = 0.221, size = 0, normalized size = 0.

$$\int \frac{F^{a+b(\ln(cx^n))^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2)/x^3,x)

[Out] int(F^(a+b*ln(c*x^n)^2)/x^3,x)
```

Maxima [A] time = 0.897178, size = 112, normalized size = 1.33

$$\frac{\sqrt{\pi}F^{b\log(c)^2+a}\,\mathrm{erf}\left(\sqrt{-b\log(F)}n\log(x)-\frac{bn\log(F)\log(c)-1}{\sqrt{-b\log(F)}n}\right)e^{\left(-\frac{(bn\log(F)\log(c)-1)^2}{bn^2\log(F)}\right)}}{2\sqrt{-b\log(F)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x^3,x, algorithm="maxima")

[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*erf(sqrt(-b*log(F))*n*log(x) - (b
*n*log(F)*log(c) - 1)/(sqrt(-b*log(F))*n))*e^(-(b*n*log(F)*log(c)
 - 1)^2/(b*n^2*log(F)))/(sqrt(-b*log(F))*n)
```

Fricas [A] time = 0.277276, size = 123, normalized size = 1.46

$$\frac{\sqrt{\pi}bn\,\mathrm{erf}\left(\frac{\left(bn^2\log(F)\log(x)+bn\log(F)\log(c)-1\right)\sqrt{-bn^2\log(F)}}{bn^2\log(F)}\right)e^{\left(\frac{abn^2\log(F)^2+2\,bn\log(F)\log(c)-1}{bn^2\log(F)}\right)}\log(F)}{2\sqrt{-bn^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x^3,x, algorithm="fricas")

[Out] 1/2*sqrt(pi)*b*n*erf((b*n^2*log(F)*log(x) + b*n*log(F)*log(c) - 1
)*sqrt(-b*n^2*log(F))/(b*n^2*log(F)))*e^((a*b*n^2*log(F)^2 + 2*b*
n*log(F)*log(c) - 1)/(b*n^2*log(F)))*log(F)/sqrt(-b*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2)/x**3,x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{b\log(cx^n)^2+a}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^(b*log(c*x^n)^2 + a)/x^3,x, algorithm="giac")
```

```
[Out] integrate(F^(b*log(c*x^n)^2 + a)/x^3, x)
```

3.592 $\int F^{a+b\log^2(cx^n)}(dx)^m\,dx$

Optimal. Leaf size=105

$$\frac{\sqrt{\pi}F^a(dx)^{m+1}\left(cx^n\right)^{-\frac{m+1}{n}}e^{-\frac{(m+1)^2}{4bn^2\log(F)}}\operatorname{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+m+1}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}dn\sqrt{\log(F)}}$$

```
[Out] (F^a*Sqrt[Pi]*(d*x)^(1 + m)*Erfi[(1 + m + 2*b*n*Log[F]*Log[c*x^n]
)/(2*Sqrt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*d*E^((1 + m)^2/(4*b*n^2
*Log[F]))*n*(c*x^n)^((1 + m)/n)*Sqrt[Log[F]])
```

Rubi [A] time = 0.253628, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{\sqrt{\pi}F^a(dx)^{m+1}\left(cx^n\right)^{-\frac{m+1}{n}}e^{-\frac{(m+1)^2}{4bn^2\log(F)}}\operatorname{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+m+1}{2\sqrt{b}n\sqrt{\log(F)}}\right)}{2\sqrt{b}dn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n]^2)*(d*x)^m,x]
```

```
[Out] (F^a*Sqrt[Pi]*(d*x)^(1 + m)*Erfi[(1 + m + 2*b*n*Log[F]*Log[c*x^n]
)/(2*Sqrt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*d*E^((1 + m)^2/(4*b*n^2
*Log[F]))*n*(c*x^n)^((1 + m)/n)*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log{(cx^n)}^2}\,(dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(a+b*ln(c*x**n)**2)*(d*x)**m,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)*(d*x)**m, x)
```

Mathematica [A] time = 0.15682, size = 110, normalized size = 1.05

$$\frac{\sqrt{\pi}F^a x^{-m}(dx)^m\operatorname{Erfi}\left(\frac{2bn\log(F)\log(cx^n)+m+1}{2\sqrt{b}n\sqrt{\log(F)}}\right)\exp\left(-\frac{(m+1)(4bn\log(F)(\log(cx^n)-n\log(x))+m+1)}{4bn^2\log(F)}\right)}{2\sqrt{b}n\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n]^2)*(d*x)^m,x]
```

```
[Out] (F^a*Sqrt[Pi]*(d*x)^m*Erfi[(1 + m + 2*b*n*Log[F]*Log[c*x^n])/(2*S
qrt[b]*n*Sqrt[Log[F]])])/(2*Sqrt[b]*E^(((1 + m)*(1 + m + 4*b*n*Lo
g[F]*(-(n*Log[x]) + Log[c*x^n])))/(4*b*n^2*Log[F]))*n*x^m*Sqrt[Lo
g[F]])
```

Maple [F] time = 112.617, size = 0, normalized size = 0.

$$\int F^{a+b(\ln(cx^n))^2} (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(a+b*ln(c*x^n)^2)*(d*x)^m,x)
```

```
[Out] int(F^(a+b*ln(c*x^n)^2)*(d*x)^m,x)
```

Maxima [A] time = 0.843841, size = 122, normalized size = 1.16

$$\frac{\sqrt{\pi}F^{b\log(c)^2+a}d^m \operatorname{erf}\left(\sqrt{-b\log(F)}n\log(x) - \frac{2\,bn\log(F)\log(c)+m+1}{2\sqrt{-b\log(F)}n}\right)e^{\left(-\frac{(2\,bn\log(F)\log(c)+m+1)^2}{4\,bn^2\log(F)}\right)}}{2\sqrt{-b\log(F)}n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^(b*log(c*x^n)^2 + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b*log(c)^2 + a)*d^m*erf(sqrt(-b*log(F))*n*log(x)
- 1/2*(2*b*n*log(F)*log(c) + m + 1)/(sqrt(-b*log(F))*n))*e^(-1/4*
(2*b*n*log(F)*log(c) + m + 1)^2/(b*n^2*log(F)))/(sqrt(-b*log(F))*
n)
```

Fricas [A] time = 0.254847, size = 162, normalized size = 1.54

$$\frac{\sqrt{\pi}bn\operatorname{erf}\left(\frac{(2\,bn^2\log(F)\log(x)+2\,bn\log(F)\log(c)+m+1)\sqrt{-bn^2\log(F)}}{2\,bn^2\log(F)}\right)e^{\left(\frac{4\,abn^2\log(F)^2+4\,bmn^2\log(F)\log(d)-4\,(bm+b)n\log(F)\log(c)-m^2-2\,m-1}{4\,bn^2\log(F)}\right)}\log(F)}{2\sqrt{-bn^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^(b*log(c*x^n)^2 + a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b*n^2*log(F)*log(x) + 2*b*n*log(F)*lo
g(c) + m + 1)*sqrt(-b*n^2*log(F))/(b*n^2*log(F)))*e^(1/4*(4*a*b*n
^2*log(F)^2 + 4*b*m*n^2*log(F)*log(d) - 4*(b*m + b)*n*log(F)*log(
c) - m^2 - 2*m - 1)/(b*n^2*log(F)))*log(F)/sqrt(-b*n^2*log(F))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{a+b\log(cx^n)^2} (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(a+b*ln(c*x**n)**2)*(d*x)**m,x)
```

```
[Out] Integral(F**(a + b*log(c*x**n)**2)*(d*x)**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx)^m F^{b\log(cx^n)^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^(b*log(c*x^n)^2 + a),x, algorithm="giac")
```

```
[Out] integrate((d*x)^m*F^(b*log(c*x^n)^2 + a), x)
```

3.593 $\int F^{(a+b\log(cx^n))^2}x^2\,dx$

Optimal. Leaf size=99

$$\frac{\sqrt{\pi}x^3\left(cx^n\right)^{-3/n}e^{-\frac{3(4abn\log(F)+3)}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{2ab\log(F)+2b^2\log(F)\log(cx^n)+\frac{3}{n}}{2b\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

```
[Out] (Sqrt[Pi]*x^3*Erfi[(3/n + 2*a*b*Log[F] + 2*b^2*Log[F]*Log[c*x^n])
/(2*b*Sqrt[Log[F]])])/(2*b*E^((3*(3 + 4*a*b*n*Log[F]))/(4*b^2*n^2
*Log[F]))*n*(c*x^n)^(3/n)*Sqrt[Log[F]])
```

Rubi [A] time = 0.311955, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{\sqrt{\pi}x^3\left(cx^n\right)^{-3/n}e^{-\frac{3(4abn\log(F)+3)}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{2ab\log(F)+2b^2\log(F)\log(cx^n)+\frac{3}{n}}{2b\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2*x^2,x]
```

```
[Out] (Sqrt[Pi]*x^3*Erfi[(3/n + 2*a*b*Log[F] + 2*b^2*Log[F]*Log[c*x^n])
/(2*b*Sqrt[Log[F]])])/(2*b*E^((3*(3 + 4*a*b*n*Log[F]))/(4*b^2*n^2
*Log[F]))*n*(c*x^n)^(3/n)*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(a+b\log(cx^n))^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2)*x**2,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)*x**2, x)
```

Mathematica [A] time = 0.268465, size = 96, normalized size = 0.97

$$\frac{\sqrt{\pi}\operatorname{Erfi}\left(\frac{2bn\log(F)(a+b\log(cx^n))+3}{2bn\sqrt{\log(F)}}\right)\exp\left(-\frac{3(4bn\log(F)(a+b(\log(cx^n)-n\log(x)))+3)}{4b^2n^2\log(F)}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2*x^2,x]
```

```
[Out] (Sqrt[Pi]*Erfi[(3 + 2*b*n*Log[F]*(a + b*Log[c*x^n]))/(2*b*n*Sqrt[
Log[F]])])/(2*b*E^((3*(3 + 4*b*n*Log[F]*(a + b*(-(n*Log[x]) + Log
[c*x^n]))))/(4*b^2*n^2*Log[F]))*n*Sqrt[Log[F]])
```

Maple [F] time = 0.272, size = 0, normalized size = 0.

$$\int F^{(a+b\ln(cx^n))^2}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^((a+b*ln(c*x^n))^2)*x^2,x)
```

```
[Out] int(F^((a+b*ln(c*x^n))^2)*x^2,x)
```

Maxima [A] time = 0.855245, size = 155, normalized size = 1.57

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}\,\mathrm{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{2\,(b^2n\log(c)+abn)\log(F)+3}{2\,bn\sqrt{-\log(F)}}\right)e^{\left(-\frac{\left(2\,(b^2n\log(c)+abn)\log(F)+3\right)^2}{4\,b^2n^2\log(F)}\right)}}{2\,bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)*x^2,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*erf(b*n*sqrt(-
log(F))*log(x) - 1/2*(2*(b^2*n*log(c) + a*b*n)*log(F) + 3)/(b*n*s
qrt(-log(F))))*e^(-1/4*(2*(b^2*n*log(c) + a*b*n)*log(F) + 3)^2/(b
^2*n^2*log(F)))/(b*n*sqrt(-log(F)))
```

Fricas [A] time = 0.277589, size = 147, normalized size = 1.48

$$\frac{\sqrt{\pi}bn\,\mathrm{erf}\left(\frac{(2\,b^2n^2\log(F)\log(x)+2\,b^2n\log(F)\log(c)+2\,abn\log(F)+3)\sqrt{-b^2n^2\log(F)}}{2\,b^2n^2\log(F)}\right)e^{\left(-\frac{3\left(4\,b^2n\log(F)\log(c)+4\,abn\log(F)+3\right)}{4\,b^2n^2\log(F)}\right)}\log(F)}{2\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)*x^2,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b^2*n^2*log(F)*log(x) + 2*b^2*n*log(F
)*log(c) + 2*a*b*n*log(F) + 3)*sqrt(-b^2*n^2*log(F))/(b^2*n^2*log
(F)))*e^(-3/4*(4*b^2*n*log(F)*log(c) + 4*a*b*n*log(F) + 3)/(b^2*n
^2*log(F)))*log(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**((a+b*ln(c*x**n))**2)*x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{\left((b\log(cx^n)+a)^2\right)}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)*x^2,x, algorithm="giac")
```

```
[Out] integrate(F^((b*log(c*x^n) + a)^2)*x^2, x)
```

3.594 $\int F^{(a+b\log(cx^n))^2} x\,dx$

Optimal. Leaf size=90

$$\frac{\sqrt{\pi}x^2\left(cx^n\right)^{-2/n}e^{-\frac{2abn\log(F)+1}{b^2n^2\log(F)}}\text{Erfi}\left(\frac{ab\log(F)+b^2\log(F)\log(cx^n)+\frac{1}{n}}{b\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

```
[Out] (Sqrt[Pi]*x^2*Erfi[(n^(-1) + a*b*Log[F] + b^2*Log[F]*Log[c*x^n])/
(b*Sqrt[Log[F]])])/(2*b*E^((1 + 2*a*b*n*Log[F])/(b^2*n^2*Log[F]))
*n*(c*x^n)^(2/n)*Sqrt[Log[F]])
```

Rubi [A] time = 0.268081, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375

$$\frac{\sqrt{\pi}x^2\left(cx^n\right)^{-2/n}e^{-\frac{2abn\log(F)+1}{b^2n^2\log(F)}}\text{Erfi}\left(\frac{ab\log(F)+b^2\log(F)\log(cx^n)+\frac{1}{n}}{b\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2*x,x]
```

```
[Out] (Sqrt[Pi]*x^2*Erfi[(n^(-1) + a*b*Log[F] + b^2*Log[F]*Log[c*x^n])/
(b*Sqrt[Log[F]])])/(2*b*E^((1 + 2*a*b*n*Log[F])/(b^2*n^2*Log[F]))
*n*(c*x^n)^(2/n)*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(a+b\log(cx^n))^2} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2)*x,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)*x, x)
```

Mathematica [A] time = 0.237133, size = 90, normalized size = 1.

$$\frac{\sqrt{\pi}\text{Erfi}\left(\frac{bn\log(F)(a+b\log(cx^n))+1}{bn\sqrt{\log(F)}}\right)\exp\left(-\frac{2bn\log(F)(a+b(\log(cx^n)-n\log(x)))+1}{b^2n^2\log(F)}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2*x,x]
```

```
[Out] (Sqrt[Pi]*Erfi[(1 + b*n*Log[F]*(a + b*Log[c*x^n]))/(b*n*Sqrt[Log[
F]])])/(2*b*E^((1 + 2*b*n*Log[F]*(a + b*(-(n*Log[x]) + Log[c*x^n]
)))/(b^2*n^2*Log[F]))*n*Sqrt[Log[F]])
```

Maple [F] time = 0.153, size = 0, normalized size = 0.

$$\int F^{(a+b\ln(cx^n))^2} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^((a+b*ln(c*x^n))^2)*x,x)
```

```
[Out] int(F^((a+b*ln(c*x^n))^2)*x,x)
```

Maxima [A] time = 0.856605, size = 153, normalized size = 1.7

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}\operatorname{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{(b^2n\log(c)+abn)\log(F)+1}{bn\sqrt{-\log(F)}}\right)e^{\left(-\frac{\left((b^2n\log(c)+abn)\log(F)+1\right)^2}{b^2n^2\log(F)}\right)}}{2\,bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)*x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*erf(b*n*sqrt(-
log(F))*log(x) - ((b^2*n*log(c) + a*b*n)*log(F) + 1)/(b*n*sqrt(-l
og(F))))*e^(-((b^2*n*log(c) + a*b*n)*log(F) + 1)^2/(b^2*n^2*log(F
)))/(b*n*sqrt(-log(F)))
```

Fricas [A] time = 0.252776, size = 142, normalized size = 1.58

$$\frac{\sqrt{\pi}bn\operatorname{erf}\left(\frac{(b^2n^2\log(F)\log(x)+b^2n\log(F)\log(c)+abn\log(F)+1)\sqrt{-b^2n^2\log(F)}}{b^2n^2\log(F)}\right)e^{\left(-\frac{2\,b^2n\log(F)\log(c)+2\,abn\log(F)+1}{b^2n^2\log(F)}\right)}\log(F)}{2\,\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)*x,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf((b^2*n^2*log(F)*log(x) + b^2*n*log(F)*log(c)
 + a*b*n*log(F) + 1)*sqrt(-b^2*n^2*log(F))/(b^2*n^2*log(F)))*e^(-
(2*b^2*n*log(F)*log(c) + 2*a*b*n*log(F) + 1)/(b^2*n^2*log(F)))*lo
g(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**((a+b*ln(c*x**n))**2)*x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int F^{\left((b\log(cx^n)+a)^2\right)}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)*x,x, algorithm="giac")
```

```
[Out] integrate(F^((b*log(c*x^n) + a)^2)*x, x)
```

3.595 $\int F^{(a+b\log(cx^n))^2}\,dx$

Optimal. Leaf size=95

$$\frac{\sqrt{\pi}x\,(cx^n)^{-1/n}\,e^{-\frac{4abn\log(F)+1}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{2ab\log(F)+2b^2\log(F)\log(cx^n)+\frac{1}{n}}{2b\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

```
[Out] (Sqrt[Pi]*x*Erfi[(n^(-1) + 2*a*b*Log[F] + 2*b^2*Log[F]*Log[c*x^n]
)/(2*b*Sqrt[Log[F]])])/(2*b*E^((1 + 4*a*b*n*Log[F])/(4*b^2*n^2*Lo
g[F]))*n*(c*x^n)^n^(-1)*Sqrt[Log[F]])
```

Rubi [A] time = 0.220295, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429

$$\frac{\sqrt{\pi}x\,(cx^n)^{-1/n}\,e^{-\frac{4abn\log(F)+1}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{2ab\log(F)+2b^2\log(F)\log(cx^n)+\frac{1}{n}}{2b\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2,x]
```

```
[Out] (Sqrt[Pi]*x*Erfi[(n^(-1) + 2*a*b*Log[F] + 2*b^2*Log[F]*Log[c*x^n]
)/(2*b*Sqrt[Log[F]])])/(2*b*E^((1 + 4*a*b*n*Log[F])/(4*b^2*n^2*Lo
g[F]))*n*(c*x^n)^n^(-1)*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(a+b\log(cx^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2),x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2), x)
```

Mathematica [A] time = 0.147054, size = 93, normalized size = 0.98

$$\frac{\sqrt{\pi}x\,(cx^n)^{-1/n}\,e^{-\frac{4abn\log(F)+1}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{2bn\log(F)(a+b\log(cx^n))+1}{2bn\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2,x]
```

```
[Out] (Sqrt[Pi]*x*Erfi[(1 + 2*b*n*Log[F]*(a + b*Log[c*x^n]))/(2*b*n*Sqr
t[Log[F]])])/(2*b*E^((1 + 4*a*b*n*Log[F])/(4*b^2*n^2*Log[F]))*n*(
c*x^n)^n^(-1)*Sqrt[Log[F]])
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int F^{(a+b\ln(cx^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^((a+b*ln(c*x^n))^2),x)
```

```
[Out] int(F^((a+b*ln(c*x^n))^2),x)
```

Maxima [A] time = 0.890416, size = 155, normalized size = 1.63

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}\,\mathrm{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{2\,(b^2n\log(c)+abn)\log(F)+1}{2\,bn\sqrt{-\log(F)}}\right)e^{\left(-\frac{\left(2\,(b^2n\log(c)+abn)\log(F)+1\right)^2}{4\,b^2n^2\log(F)}\right)}}{2\,bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*erf(b*n*sqrt(-
log(F))*log(x) - 1/2*(2*(b^2*n*log(c) + a*b*n)*log(F) + 1)/(b*n*s
qrt(-log(F))))*e^(-1/4*(2*(b^2*n*log(c) + a*b*n)*log(F) + 1)^2/(b
^2*n^2*log(F)))/(b*n*sqrt(-log(F)))
```

Fricas [A] time = 0.268176, size = 147, normalized size = 1.55

$$\frac{\sqrt{\pi}bn\,\mathrm{erf}\left(\frac{(2\,b^2n^2\log(F)\log(x)+2\,b^2n\log(F)\log(c)+2\,abn\log(F)+1)\sqrt{-b^2n^2\log(F)}}{2\,b^2n^2\log(F)}\right)e^{\left(-\frac{4\,b^2n\log(F)\log(c)+4\,abn\log(F)+1}{4\,b^2n^2\log(F)}\right)}\log(F)}{2\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b^2*n^2*log(F)*log(x) + 2*b^2*n*log(F
)*log(c) + 2*a*b*n*log(F) + 1)*sqrt(-b^2*n^2*log(F))/(b^2*n^2*log
(F)))*e^(-1/4*(4*b^2*n*log(F)*log(c) + 4*a*b*n*log(F) + 1)/(b^2*n
^2*log(F)))*log(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(a+b\log(cx^n))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**((a+b*ln(c*x**n))**2),x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2), x)
```

GIAC/XCAS [A] time = 0.381137, size = 130, normalized size = 1.37

$$\frac{\sqrt{\pi}\,\mathrm{erf}\left(bn\sqrt{-\ln(F)}\ln(x) + b\sqrt{-\ln(F)}\ln(c) + a\sqrt{-\ln(F)} + \frac{\sqrt{-\ln(F)}}{2\,bn\ln(F)}\right)e^{\left(-\frac{\ln(c)}{n} - \frac{a}{bn} - \frac{1}{4\,b^2n^2\ln(F)}\right)}}{2\,bn\sqrt{-\ln(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(pi)*erf(b*n*sqrt(-ln(F))*ln(x) + b*sqrt(-ln(F))*ln(c) +
a*sqrt(-ln(F)) + 1/2*sqrt(-ln(F))/(b*n*ln(F)))*e^(-ln(c)/n - a/(b
*n) - 1/4/(b^2*n^2*ln(F)))/(b*n*sqrt(-ln(F)))
```

3.596 $\int \frac{F^{(a+b\log(cx^n))^2}}{x}\,dx$

Optimal. Leaf size=45

$$\frac{\sqrt{\pi}\mathrm{Erfi}\left(a\sqrt{\log(F)}+b\sqrt{\log(F)}\log\left(cx^n\right)\right)}{2bn\sqrt{\log(F)}}$$

```
[Out] (Sqrt[Pi]*Erfi[a*Sqrt[Log[F]] + b*Sqrt[Log[F]]*Log[c*x^n]])/(2*b*
n*Sqrt[Log[F]])
```

Rubi [A] time = 0.177056, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{\sqrt{\pi}\mathrm{Erfi}\left(a\sqrt{\log(F)}+b\sqrt{\log(F)}\log\left(cx^n\right)\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2/x,x]
```

```
[Out] (Sqrt[Pi]*Erfi[a*Sqrt[Log[F]] + b*Sqrt[Log[F]]*Log[c*x^n]])/(2*b*
n*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(a+b\log(cx^n))^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2)/x,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)/x, x)
```

Mathematica [A] time = 0.0103419, size = 39, normalized size = 0.87

$$\frac{\sqrt{\pi}\mathrm{Erfi}\left(\sqrt{\log(F)}\left(a+b\log\left(cx^n\right)\right)\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2/x,x]
```

```
[Out] (Sqrt[Pi]*Erfi[Sqrt[Log[F]]*(a + b*Log[c*x^n])])/(2*b*n*Sqrt[Log[
F]])
```

Maple [C] time = 0.46, size = 95, normalized size = 2.1

$$-\frac{\sqrt{\pi}}{2\,nb}Erf\left(-b\sqrt{-\ln(F)}\ln(x^n)+\ln(F)\left(a+b\left(\ln(c)-\frac{i}{2}\pi\,csgn(icx^n)\left(-csgn(icx^n)+csgn(ic)\right)\left(-csgn(icx^n)+csgn(ix^n)\right)\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(F^((a+b*ln(c*x^n))^2)/x,x)
```

```
[Out] -1/2/n*Pi^(1/2)/b/(-ln(F))^(1/2)*erf(-b*(-ln(F))^(1/2)*ln(x^n)+(a
+b*(ln(c)-1/2*I*Pi*csgn(I*c*x^n)*(-csgn(I*c*x^n)+csgn(I*c))*(-csg
n(I*c*x^n)+csgn(I*x^n))))*ln(F)/(-ln(F))^(1/2))
```

Maxima [A]   time = 0.937964, size = 139, normalized size = 3.09

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}\operatorname{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{(b^2n\log(c)+abn)\log(F)}{bn\sqrt{-\log(F)}}\right)}{2\,F^{\frac{(b^2n\log(c)+abn)^2}{b^2n^2}}bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((b*log(c*x^n) + a)^2)/x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*erf(b*n*sqrt(-
log(F))*log(x) - (b^2*n*log(c) + a*b*n)*log(F)/(b*n*sqrt(-log(F))
))/(F^((b^2*n*log(c) + a*b*n)^2/(b^2*n^2))*b*n*sqrt(-log(F)))
```

Fricas [A]   time = 0.270663, size = 70, normalized size = 1.56

$$\frac{\sqrt{\pi}bn\operatorname{erf}\left(\frac{\sqrt{-b^2n^2\log(F)}(bn\log(x)+b\log(c)+a)}{bn}\right)\log(F)}{2\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F^((b*log(c*x^n) + a)^2)/x,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(sqrt(-b^2*n^2*log(F))*(b*n*log(x) + b*log(c)
 + a)/(b*n))*log(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F]   time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{(a+b\log(cx^n))^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(F**((a+b*ln(c*x**n))**2)/x,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)/x, x)
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int\frac{F^{\left((b\log(cx^n)+a)^2\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x,x, algorithm="giac")

[Out] integrate(F^((b*log(c*x^n) + a)^2)/x, x)
```

3.597 $\int \frac{F^{\left(a+b\log\left(cx^n\right)\right)^2}}{x^2}\,dx$

Optimal. Leaf size=95

$$-\frac{\sqrt{\pi}\,(cx^n)^{\frac{1}{n}}\,e^{-\frac{1-4abn\log(F)}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{-2ab\log(F)-2b^2\log(F)\log(cx^n)+\frac{1}{n}}{2b\sqrt{\log(F)}}\right)}{2bnx\sqrt{\log(F)}}$$

```
[Out] -(Sqrt[Pi]*(c*x^n)^n^(-1)*Erfi[(n^(-1) - 2*a*b*Log[F] - 2*b^2*Log
[F]*Log[c*x^n])/(2*b*Sqrt[Log[F]])])/(2*b*E^((1 - 4*a*b*n*Log[F])
/(4*b^2*n^2*Log[F]))*n*x*Sqrt[Log[F]])
```

Rubi [A] time = 0.283993, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{\sqrt{\pi}\,(cx^n)^{\frac{1}{n}}\,e^{-\frac{1-4abn\log(F)}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{-2ab\log(F)-2b^2\log(F)\log(cx^n)+\frac{1}{n}}{2b\sqrt{\log(F)}}\right)}{2bnx\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2/x^2,x]
```

```
[Out] -(Sqrt[Pi]*(c*x^n)^n^(-1)*Erfi[(n^(-1) - 2*a*b*Log[F] - 2*b^2*Log
[F]*Log[c*x^n])/(2*b*Sqrt[Log[F]])])/(2*b*E^((1 - 4*a*b*n*Log[F])
/(4*b^2*n^2*Log[F]))*n*x*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(a+b\log(cx^n))^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2)/x**2,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)/x**2, x)
```

Mathematica [A] time = 0.2122, size = 93, normalized size = 0.98

$$\frac{\sqrt{\pi}\,(cx^n)^{\frac{1}{n}}\,e^{\frac{4abn\log(F)-1}{4b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{2bn\log(F)(a+b\log(cx^n))-1}{2bn\sqrt{\log(F)}}\right)}{2bnx\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2/x^2,x]
```

```
[Out] (E^((-1 + 4*a*b*n*Log[F])/(4*b^2*n^2*Log[F]))*Sqrt[Pi]*(c*x^n)^n^
(-1)*Erfi[(-1 + 2*b*n*Log[F]*(a + b*Log[c*x^n]))/(2*b*n*Sqrt[Log[
F]])])/(2*b*n*x*Sqrt[Log[F]])
```

Maple [F] time = 0.191, size = 0, normalized size = 0.

$$\int \frac{F^{(a+b\ln(cx^n))^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^((a+b*ln(c*x^n))^2)/x^2,x)
```

```
[Out] int(F^((a+b*ln(c*x^n))^2)/x^2,x)
```

Maxima [A] time = 0.920452, size = 155, normalized size = 1.63

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}\,\mathrm{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{2\,(b^2n\log(c)+abn)\log(F)-1}{2\,bn\sqrt{-\log(F)}}\right)e^{\left(-\frac{\left(2\,\left(b^2n\log(c)+abn\right)\log(F)-1\right)^2}{4\,b^2n^2\log(F)}\right)}}{2\,bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*erf(b*n*sqrt(-
log(F))*log(x) - 1/2*(2*(b^2*n*log(c) + a*b*n)*log(F) - 1)/(b*n*s
qrt(-log(F))))*e^(-1/4*(2*(b^2*n*log(c) + a*b*n)*log(F) - 1)^2/(b
^2*n^2*log(F)))/(b*n*sqrt(-log(F)))
```

Fricas [A] time = 0.267716, size = 147, normalized size = 1.55

$$\frac{\sqrt{\pi}bn\,\mathrm{erf}\left(\frac{\left(2\,b^2n^2\log(F)\log(x)+2\,b^2n\log(F)\log(c)+2\,abn\log(F)-1\right)\sqrt{-b^2n^2\log(F)}}{2\,b^2n^2\log(F)}\right)e^{\left(\frac{4\,b^2n\log(F)\log(c)+4\,abn\log(F)-1}{4\,b^2n^2\log(F)}\right)}\log(F)}{2\,\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b^2*n^2*log(F)*log(x) + 2*b^2*n*log(F
)*log(c) + 2*a*b*n*log(F) - 1)*sqrt(-b^2*n^2*log(F))/(b^2*n^2*log
(F)))*e^(1/4*(4*b^2*n*log(F)*log(c) + 4*a*b*n*log(F) - 1)/(b^2*n^
2*log(F)))*log(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**((a+b*ln(c*x**n))**2)/x**2,x)
```

```
[Out] Timed out
```

<u>GIAC/XCAS</u> [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{\left((b\log(cx^n)+a)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(F^((b*log(c*x^n) + a)^2)/x^2, x)
```

3.598 $\int \frac{F^{\left(a+b\log\left(cx^n\right)\right)^2}}{x^3}\,dx$

Optimal. Leaf size=92

$$-\frac{\sqrt{\pi}\left(cx^n\right)^{2/n}e^{-\frac{1-2abn\log(F)}{b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{-ab\log(F)+b^2(-\log(F))\log\left(cx^n\right)+\frac{1}{n}}{b\sqrt{\log(F)}}\right)}{2bnx^2\sqrt{\log(F)}}$$

```
[Out] -(Sqrt[Pi]*(c*x^n)^(2/n)*Erfi[(n^(-1) - a*b*Log[F] - b^2*Log[F]*L
og[c*x^n])/(b*Sqrt[Log[F]])])/(2*b*E^((1 - 2*a*b*n*Log[F])/(b^2*n
^2*Log[F]))*n*x^2*Sqrt[Log[F]])
```

Rubi [A] time = 0.292321, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{\sqrt{\pi}\left(cx^n\right)^{2/n}e^{-\frac{1-2abn\log(F)}{b^2n^2\log(F)}}\operatorname{Erfi}\left(\frac{-ab\log(F)+b^2(-\log(F))\log\left(cx^n\right)+\frac{1}{n}}{b\sqrt{\log(F)}}\right)}{2bnx^2\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2/x^3,x]
```

```
[Out] -(Sqrt[Pi]*(c*x^n)^(2/n)*Erfi[(n^(-1) - a*b*Log[F] - b^2*Log[F]*L
og[c*x^n])/(b*Sqrt[Log[F]])])/(2*b*E^((1 - 2*a*b*n*Log[F])/(b^2*n
^2*Log[F]))*n*x^2*Sqrt[Log[F]])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{(a+b\log(cx^n))^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2)/x**3,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)/x**3, x)
```

Mathematica [A] time = 0.235709, size = 89, normalized size = 0.97

$$\frac{\sqrt{\pi}\operatorname{Erfi}\left(\frac{bn\log(F)(a+b\log(cx^n))-1}{bn\sqrt{\log(F)}}\right)\exp\left(\frac{2bn\log(F)(a+b(\log(cx^n)-n\log(x)))-1}{b^2n^2\log(F)}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2/x^3,x]
```

```
[Out] (E^((-1 + 2*b*n*Log[F]*(a + b*(-(n*Log[x]) + Log[c*x^n])))/(b^2*n
^2*Log[F]))*Sqrt[Pi]*Erfi[(-1 + b*n*Log[F]*(a + b*Log[c*x^n]))/(b
*n*Sqrt[Log[F]])])/(2*b*n*Sqrt[Log[F]])
```

Maple [F] time = 0.227, size = 0, normalized size = 0.

$$\int \frac{F^{(a+b\ln(cx^n))^2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^((a+b*ln(c*x^n))^2)/x^3,x)
```

```
[Out] int(F^((a+b*ln(c*x^n))^2)/x^3,x)
```

Maxima [A] time = 0.895099, size = 153, normalized size = 1.66

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}\operatorname{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{(b^2n\log(c)+abn)\log(F)-1}{bn\sqrt{-\log(F)}}\right)e^{\left(-\frac{\left((b^2n\log(c)+abn)\log(F)-1\right)^2}{b^2n^2\log(F)}\right)}}{2\,bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*erf(b*n*sqrt(-
log(F))*log(x) - ((b^2*n*log(c) + a*b*n)*log(F) - 1)/(b*n*sqrt(-l
og(F))))*e^(-((b^2*n*log(c) + a*b*n)*log(F) - 1)^2/(b^2*n^2*log(F
)))/(b*n*sqrt(-log(F)))
```

Fricas [A] time = 0.261263, size = 140, normalized size = 1.52

$$\frac{\sqrt{\pi}bn\operatorname{erf}\left(\frac{(b^2n^2\log(F)\log(x)+b^2n\log(F)\log(c)+abn\log(F)-1)\sqrt{-b^2n^2\log(F)}}{b^2n^2\log(F)}\right)e^{\left(\frac{2\,b^2n\log(F)\log(c)+2\,abn\log(F)-1}{b^2n^2\log(F)}\right)}\log(F)}{2\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf((b^2*n^2*log(F)*log(x) + b^2*n*log(F)*log(c)
 + a*b*n*log(F) - 1)*sqrt(-b^2*n^2*log(F))/(b^2*n^2*log(F)))*e^((
2*b^2*n*log(F)*log(c) + 2*a*b*n*log(F) - 1)/(b^2*n^2*log(F)))*log
(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**((a+b*ln(c*x**n))**2)/x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{F^{\left((b\log(cx^n)+a)^2\right)}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F^((b*log(c*x^n) + a)^2)/x^3,x, algorithm="giac")

[Out] integrate(F^((b*log(c*x^n) + a)^2)/x^3, x)
```

3.599 $\int F^{(a+b\log(cx^n))^2}(dx)^m\,dx$

Optimal. Leaf size=115

$$\frac{\sqrt{\pi}xF^{a^2}(dx)^m(cx^n)^{-\frac{m+1}{n}}e^{-\frac{(2abn\log(F)+m+1)^2}{4b^2n^2\log(F)}}\text{Erfi}\left(\frac{2abn\log(F)+2b^2n\log(F)\log(cx^n)+m+1}{2bn\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

```
[Out] (F^a^2*Sqrt[Pi]*x*(d*x)^m*Erfi[(1 + m + 2*a*b*n*Log[F] + 2*b^2*n*
Log[F]*Log[c*x^n])/(2*b*n*Sqrt[Log[F]])])/(2*b*E^((1 + m + 2*a*b*
n*Log[F])^2/(4*b^2*n^2*Log[F]))*n*(c*x^n)^((1 + m)/n)*Sqrt[Log[F]
])
```

Rubi [A] time = 0.516142, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.35

$$\frac{\sqrt{\pi}xF^{a^2}(dx)^m(cx^n)^{-\frac{m+1}{n}}e^{-\frac{(2abn\log(F)+m+1)^2}{4b^2n^2\log(F)}}\text{Erfi}\left(\frac{2abn\log(F)+2b^2n\log(F)\log(cx^n)+m+1}{2bn\sqrt{\log(F)}}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*Log[c*x^n])^2*(d*x)^m,x]
```

```
[Out] (F^a^2*Sqrt[Pi]*x*(d*x)^m*Erfi[(1 + m + 2*a*b*n*Log[F] + 2*b^2*n*
Log[F]*Log[c*x^n])/(2*b*n*Sqrt[Log[F]])])/(2*b*E^((1 + m + 2*a*b*
n*Log[F])^2/(4*b^2*n^2*Log[F]))*n*(c*x^n)^((1 + m)/n)*Sqrt[Log[F]
])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int F^{(a+b\log(cx^n))^2}(dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**((a+b*ln(c*x**n))**2)*(d*x)**m,x)
```

```
[Out] Integral(F**((a + b*log(c*x**n))**2)*(d*x)**m, x)
```

Mathematica [A] time = 0.292099, size = 111, normalized size = 0.97

$$\frac{\sqrt{\pi}x^{-m}(dx)^m\text{Erfi}\left(\frac{2bn\log(F)(a+b\log(cx^n))+m+1}{2bn\sqrt{\log(F)}}\right)\exp\left(-\frac{(m+1)(4bn\log(F)(a+b(\log(cx^n)-n\log(x)))+m+1)}{4b^2n^2\log(F)}\right)}{2bn\sqrt{\log(F)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*Log[c*x^n])^2*(d*x)^m,x]
```

```
[Out] (Sqrt[Pi]*(d*x)^m*Erfi[(1 + m + 2*b*n*Log[F]*(a + b*Log[c*x^n]))/
(2*b*n*Sqrt[Log[F]])])/(2*b*E^(((1 + m)*(1 + m + 4*b*n*Log[F]*(a
+ b*(-(n*Log[x]) + Log[c*x^n]))))/(4*b^2*n^2*Log[F]))*n*x^m*Sqrt[
```

```
Log[F]])
```

Maple [F] time = 180., size = 0, normalized size = 0.

$$\int F^{(a+b\ln(cx^n))^2}(dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^((a+b*ln(c*x^n))^2)*(d*x)^m,x)
```

```
[Out] int(F^((a+b*ln(c*x^n))^2)*(d*x)^m,x)
```

Maxima [A] time = 0.880357, size = 162, normalized size = 1.41

$$\frac{\sqrt{\pi}F^{b^2\log(c)^2+2\,ab\log(c)+a^2}d^m\operatorname{erf}\left(bn\sqrt{-\log(F)}\log(x)-\frac{2\,(b^2n\log(c)+abn)\log(F)+m+1}{2\,bn\sqrt{-\log(F)}}\right)e^{\left(-\frac{\left(2\left(b^2n\log(c)+abn\right)\log(F)+m+1\right)^2}{4\,b^2n^2\log(F)}\right)}}{2\,bn\sqrt{-\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^((b*log(c*x^n) + a)^2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*F^(b^2*log(c)^2 + 2*a*b*log(c) + a^2)*d^m*erf(b*n*sq
rt(-log(F))*log(x) - 1/2*(2*(b^2*n*log(c) + a*b*n)*log(F) + m + 1
)/(b*n*sqrt(-log(F))))*e^(-1/4*(2*(b^2*n*log(c) + a*b*n)*log(F) +
 m + 1)^2/(b^2*n^2*log(F)))/(b*n*sqrt(-log(F)))
```

Fricas [A] time = 0.256281, size = 193, normalized size = 1.68

$$\frac{\sqrt{\pi}bn\operatorname{erf}\left(\frac{(2\,b^2n^2\log(F)\log(x)+2\,b^2n\log(F)\log(c)+2\,abn\log(F)+m+1)\sqrt{-b^2n^2\log(F)}}{2\,b^2n^2\log(F)}\right)e^{\left(\frac{4\,b^2mn^2\log(F)\log(d)-4\left(b^2m+b^2\right)n\log(F)\log(c)-4\,(abm+ab)n\log(F)-m^2-}{4\,b^2n^2\log(F)}\right.}}{2\,\sqrt{-b^2n^2\log(F)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^((b*log(c*x^n) + a)^2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(pi)*b*n*erf(1/2*(2*b^2*n^2*log(F)*log(x) + 2*b^2*n*log(F
)*log(c) + 2*a*b*n*log(F) + m + 1)*sqrt(-b^2*n^2*log(F))/(b^2*n^2
*log(F)))*e^(1/4*(4*b^2*m*n^2*log(F)*log(d) - 4*(b^2*m + b^2)*n*l
og(F)*log(c) - 4*(a*b*m + a*b)*n*log(F) - m^2 - 2*m - 1)/(b^2*n^2
*log(F)))*log(F)/sqrt(-b^2*n^2*log(F))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**((a+b*ln(c*x**n))**2)*(d*x)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx)^m F^{\left((b\log(cx^n)+a)^2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)^m*F^((b*log(c*x^n) + a)^2),x, algorithm="giac")
```

```
[Out] integrate((d*x)^m*F^((b*log(c*x^n) + a)^2), x)
```

3.600 $\int F^{a+bx+cx^3}\left(b+3cx^2\right)\,dx$

Optimal. Leaf size=17

$$\frac{F^{a+bx+cx^3}}{\log(F)}$$

```
[Out] F^(a + b*x + c*x^3)/Log[F]
```

Rubi [A] time = 0.0797743, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$

$$\frac{F^{a+bx+cx^3}}{\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[F^(a + b*x + c*x^3)*(b + 3*c*x^2),x]

[Out] F^(a + b*x + c*x^3)/Log[F]
```

Rubi in Sympy [A] time = 8.63766, size = 14, normalized size = 0.82

$$\frac{F^{a+bx+cx^3}}{\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(c*x**3+b*x+a)*(3*c*x**2+b),x)

[Out] F**(a + b*x + c*x**3)/log(F)
```

Mathematica [A] time = 0.0133753, size = 17, normalized size = 1.

$$\frac{F^{a+bx+cx^3}}{\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[F^(a + b*x + c*x^3)*(b + 3*c*x^2),x]

[Out] F^(a + b*x + c*x^3)/Log[F]
```

Maple [A] time = 0.006, size = 18, normalized size = 1.1

$$\frac{F^{cx^3+bx+a}}{\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(c*x^3+b*x+a)*(3*c*x^2+b),x)
```

```
[Out] F^(c*x^3+b*x+a)/ln(F)
```

Maxima [A] time = 0.765079, size = 23, normalized size = 1.35

$$\frac{F^{cx^3+bx+a}}{\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*c*x^2 + b)*F^(c*x^3 + b*x + a),x, algorithm="maxima")
```

```
[Out] F^(c*x^3 + b*x + a)/log(F)
```

Fricas [A] time = 0.274487, size = 23, normalized size = 1.35

$$\frac{F^{cx^3+bx+a}}{\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*c*x^2 + b)*F^(c*x^3 + b*x + a),x, algorithm="fricas")
```

```
[Out] F^(c*x^3 + b*x + a)/log(F)
```

Sympy [A] time = 0.125204, size = 24, normalized size = 1.41

$$\begin{cases} \frac{F^{a+bx+cx^3}}{\log(F)} & \text{for}\ \log(F) \neq 0 \\ bx + cx^3 & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(c*x**3+b*x+a)*(3*c*x**2+b),x)
```

```
[Out] Piecewise((F**(a + b*x + c*x**3)/log(F), Ne(log(F), 0)), (b*x + c
*x**3, True))
```

GIAC/XCAS [A] time = 0.462679, size = 23, normalized size = 1.35

$$\frac{F^{cx^3+bx+a}}{\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*c*x^2 + b)*F^(c*x^3 + b*x + a),x, algorithm="giac")
```

```
[Out] F^(c*x^3 + b*x + a)/ln(F)
```

3.601 $\int \frac{F^{\frac{1}{a+bx+cx^2}}(b+2cx)}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=20

$$-\frac{F^{\frac{1}{a+bx+cx^2}}}{\log(F)}$$

```
[Out] -(F^(a + b*x + c*x^2)^(-1)/Log[F])
```

Rubi [A] time = 0.254787, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.03

$$-\frac{F^{\frac{1}{a+bx+cx^2}}}{\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Int[(F^(a + b*x + c*x^2)^(-1)*(b + 2*c*x))/(a + b*x + c*x^2)^2,x]

[Out] -(F^(a + b*x + c*x^2)^(-1)/Log[F])
```

Rubi in Sympy [A] time = 36.2511, size = 17, normalized size = 0.85

$$-\frac{F^{\frac{1}{a+bx+cx^2}}}{\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F**(1/(c*x**2+b*x+a))*(2*c*x+b)/(c*x**2+b*x+a)**2,x)

[Out] -F**(1/(a + b*x + c*x**2))/log(F)
```

Mathematica [A] time = 0.0180915, size = 19, normalized size = 0.95

$$-\frac{F^{\frac{1}{a+x(b+cx)}}}{\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(F^(a + b*x + c*x^2)^(-1)*(b + 2*c*x))/(a + b*x + c*x^2)^2,x]

[Out] -(F^(a + x*(b + c*x))^(-1)/Log[F])
```

Maple [A] time = 0.004, size = 21, normalized size = 1.1

$$-\frac{F^{(cx^2+bx+a)^{-1}}}{\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(F^(1/(c*x^2+b*x+a))*(2*c*x+b)/(c*x^2+b*x+a)^2,x)

[Out] -F^(1/(c*x^2+b*x+a))/ln(F)
```

Maxima [A] time = 0.762478, size = 27, normalized size = 1.35

$$-\frac{F^{\left(\frac{1}{cx^2+bx+a}\right)}}{\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*F^(1/(c*x^2 + b*x + a))/(c*x^2 + b*x + a)^2,x, algorithm="ma

[Out] -F^(1/(c*x^2 + b*x + a))/log(F)
```

Fricas [A] time = 0.256556, size = 27, normalized size = 1.35

$$-\frac{F^{\left(\frac{1}{cx^2+bx+a}\right)}}{\log\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*F^(1/(c*x^2 + b*x + a))/(c*x^2 + b*x + a)^2,x, algorithm="fr

[Out] -F^(1/(c*x^2 + b*x + a))/log(F)
```

Sympy [A] time = 1.24599, size = 32, normalized size = 1.6

$$\begin{cases} -\frac{F^{\frac{1}{a+bx+cx^2}}}{\log\left(F\right)} & \text{for}\ \log\left(F\right) \neq 0 \\ -\frac{1}{a+bx+cx^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F**(1/(c*x**2+b*x+a))*(2*c*x+b)/(c*x**2+b*x+a)**2,x)

[Out] Piecewise((-F**(1/(a + b*x + c*x**2))/log(F), Ne(log(F), 0)), (-1
/(a + b*x + c*x**2), True))
```

GIAC/XCAS [A] time = 0.234165, size = 27, normalized size = 1.35

$$-\frac{F^{\left(\frac{1}{cx^2+bx+a}\right)}}{\ln\left(F\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*F^(1/(c*x^2 + b*x + a))/(c*x^2 + b*x + a)^2,x, algorithm="gi

[Out] -F^(1/(c*x^2 + b*x + a))/ln(F)
```

3.602 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^m\,dx$

Optimal. Leaf size=49

$$\left(-a-bx-cx^2\right)^{-m}\left(a+bx+cx^2\right)^m\text{Gamma}\left(m+1,-a-bx-cx^2\right)$$

```
[Out] ((a + b*x + c*x^2)^m*Gamma[1 + m, -a - b*x - c*x^2])/(-a - b*x -
c*x^2)^m
```

Rubi [A] time = 0.304608, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065

$$\left(-a-bx-cx^2\right)^{-m}\left(a+bx+cx^2\right)^m\text{Gamma}\left(m+1,-a-bx-cx^2\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^m,x]
```

```
[Out] ((a + b*x + c*x^2)^m*Gamma[1 + m, -a - b*x - c*x^2])/(-a - b*x -
c*x^2)^m
```

Rubi in Sympy [A] time = 76.6116, size = 39, normalized size = 0.8

$$\left(-a-bx-cx^2\right)^{-m}\left(a+bx+cx^2\right)^m\left(m+1,-a-bx-cx^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**m,x)
```

```
[Out] (-a - b*x - c*x**2)**(-m)*(a + b*x + c*x**2)**m*Gamma(m + 1, -a -
 b*x - c*x**2)
```

Mathematica [A] time = 1.37723, size = 0, normalized size = 0.

$$\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^m\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^m,x]
```

```
[Out] Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^m, x]
```

Maple [F] time = 0.29, size = 0, normalized size = 0.

$$\int e^{cx^2+bx+a}(2\,cx+b)\left(cx^2+bx+a\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^m,x)
```

```
[Out] int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (2\,cx + b){\left(cx^{2} + bx + a\right)}^{m} e^{\left(cx^{2} + bx + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*(c*x^2 + b*x + a)^m*e^(c*x^2 + b*x + a),x, algorithm="maxima
```

```
[Out] integrate((2*c*x + b)*(c*x^2 + b*x + a)^m*e^(c*x^2 + b*x + a), x)
```

Fricas [A] time = 0.26629, size = 31, normalized size = 0.63

$$\cos\left(\pi m\right)\,\left(m + 1, -cx^{2} - bx - a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*(c*x^2 + b*x + a)^m*e^(c*x^2 + b*x + a),x, algorithm="fricas
```

```
[Out] cos(pi*m)*gamma(m + 1, -c*x^2 - b*x - a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**m,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (2\,cx + b){\left(cx^{2} + bx + a\right)}^{m} e^{\left(cx^{2} + bx + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*(c*x^2 + b*x + a)^m*e^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(c*x^2 + b*x + a)^m*e^(c*x^2 + b*x + a), x)
```

3.603 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=90

$$e^{a+bx+cx^2}\left(a+bx+cx^2\right)^3-3e^{a+bx+cx^2}\left(a+bx+cx^2\right)^2+6e^{a+bx+cx^2}\left(a+bx+cx^2\right)-6e^{a+bx+cx^2}$$

```
[Out] -6*E^(a + b*x + c*x^2) + 6*E^(a + b*x + c*x^2)*(a + b*x + c*x^2)
- 3*E^(a + b*x + c*x^2)*(a + b*x + c*x^2)^2 + E^(a + b*x + c*x^2)
*(a + b*x + c*x^2)^3
```

Rubi [A] time = 0.288744, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097

$$e^{a+bx+cx^2}\left(a+bx+cx^2\right)^3-3e^{a+bx+cx^2}\left(a+bx+cx^2\right)^2+6e^{a+bx+cx^2}\left(a+bx+cx^2\right)-6e^{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] -6*E^(a + b*x + c*x^2) + 6*E^(a + b*x + c*x^2)*(a + b*x + c*x^2)
- 3*E^(a + b*x + c*x^2)*(a + b*x + c*x^2)^2 + E^(a + b*x + c*x^2)
*(a + b*x + c*x^2)^3
```

Rubi in Sympy [A] time = 80.5323, size = 85, normalized size = 0.94

$$\left(a+bx+cx^2\right)^3e^{a+bx+cx^2}-3\left(a+bx+cx^2\right)^2e^{a+bx+cx^2}+6\left(a+bx+cx^2\right)e^{a+bx+cx^2}-6e^{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**3,x)
```

```
[Out] (a + b*x + c*x**2)**3*exp(a + b*x + c*x**2) - 3*(a + b*x + c*x**2
)**2*exp(a + b*x + c*x**2) + 6*(a + b*x + c*x**2)*exp(a + b*x + c
*x**2) - 6*exp(a + b*x + c*x**2)
```

Mathematica [A] time = 0.0289498, size = 49, normalized size = 0.54

$$e^{a+x(b+cx)}\left((a+x(b+cx))^3-3(a+x(b+cx))^2+6(a+x(b+cx))-6\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] E^(a + x*(b + c*x))*(-6 + 6*(a + x*(b + c*x)) - 3*(a + x*(b + c*x
))^2 + (a + x*(b + c*x))^3)
```

Maple [A] time = 0.008, size = 145, normalized size = 1.6

$$\left(c^3x^6+3\,bc^2x^5+3\,ac^2x^4+3\,b^2cx^4+6\,abcx^3+b^3x^3-3\,c^2x^4+3\,a^2cx^2+3\,ab^2x^2-6\,bcx^3\right.$$
$$\left.+3\,a^2bx-6\,acx^2-3\,b^2x^2+a^3-6\,abx+6\,cx^2-3\,a^2+6\,bx+6\,a-6\right)e^{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^3,x)
```

```
[Out] (c^3*x^6+3*b*c^2*x^5+3*a*c^2*x^4+3*b^2*c*x^4+6*a*b*c*x^3+b^3*x^3-
3*c^2*x^4+3*a^2*c*x^2+3*a*b^2*x^2-6*b*c*x^3+3*a^2*b*x-6*a*c*x^2-3
*b^2*x^2+a^3-6*a*b*x+6*c*x^2-3*a^2+6*b*x+6*a-6)*exp(c*x^2+b*x+a)
```

Maxima [A] time = 1.23987, size = 3214, normalized size = 35.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^3*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="maxima
```

```
[Out] 1/2*sqrt(pi)*a^3*b*erf(sqrt(-c)*x - 1/2*b/sqrt(-c))*e^(a - 1/4*b^
2/c)/sqrt(-c) - 3/4*(sqrt(pi)*(2*c*x + b)*b*(erf(1/2*sqrt(-(2*c*x
 + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(3/2)) - 2*e^(1/4*(2*c
*x + b)^2/c)/sqrt(c))*a^2*b^2*e^(a - 1/4*b^2/c)/sqrt(c) + 3/8*(sq
rt(pi)*(2*c*x + b)*b^2*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqr
t(-(2*c*x + b)^2/c)*c^(5/2)) - 4*b*e^(1/4*(2*c*x + b)^2/c)/c^(3/2
) - 4*(2*c*x + b)^3*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x +
b)^2/c)^(3/2)*c^(5/2)))*a*b^3*e^(a - 1/4*b^2/c)/sqrt(c) - 1/16*(s
qrt(pi)*(2*c*x + b)*b^3*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sq
rt(-(2*c*x + b)^2/c)*c^(7/2)) - 6*b^2*e^(1/4*(2*c*x + b)^2/c)/c^(
5/2) - 12*(2*c*x + b)^3*b*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-(2*
c*x + b)^2/c)^(3/2)*c^(7/2)) + 8*gamma(2, -1/4*(2*c*x + b)^2/c)/c
^(3/2))*b^4*e^(a - 1/4*b^2/c)/sqrt(c) - 1/2*(sqrt(pi)*(2*c*x + b)
*b*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*
c^(3/2)) - 2*e^(1/4*(2*c*x + b)^2/c)/sqrt(c))*a^3*sqrt(c)*e^(a -
1/4*b^2/c) + 9/8*(sqrt(pi)*(2*c*x + b)*b^2*(erf(1/2*sqrt(-(2*c*x
+ b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(5/2)) - 4*b*e^(1/4*(2*
c*x + b)^2/c)/c^(3/2) - 4*(2*c*x + b)^3*gamma(3/2, -1/4*(2*c*x +
b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(5/2)))*a^2*b*sqrt(c)*e^(a -
1/4*b^2/c) - 3/4*(sqrt(pi)*(2*c*x + b)*b^3*(erf(1/2*sqrt(-(2*c*x
+ b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(7/2)) - 6*b^2*e^(1/4*(
2*c*x + b)^2/c)/c^(5/2) - 12*(2*c*x + b)^3*b*gamma(3/2, -1/4*(2*c
*x + b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(7/2)) + 8*gamma(2, -1/4
*(2*c*x + b)^2/c)/c^(3/2))*a*b^2*sqrt(c)*e^(a - 1/4*b^2/c) + 5/32
*(sqrt(pi)*(2*c*x + b)*b^4*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/
(sqrt(-(2*c*x + b)^2/c)*c^(9/2)) - 8*b^3*e^(1/4*(2*c*x + b)^2/c)/
c^(7/2) - 24*(2*c*x + b)^3*b^2*gamma(3/2, -1/4*(2*c*x + b)^2/c)/(
(-(2*c*x + b)^2/c)^(3/2)*c^(9/2)) + 32*b*gamma(2, -1/4*(2*c*x + b
)^2/c)/c^(5/2) - 16*(2*c*x + b)^5*gamma(5/2, -1/4*(2*c*x + b)^2/c
)/((-(2*c*x + b)^2/c)^(5/2)*c^(9/2)))*b^3*sqrt(c)*e^(a - 1/4*b^2/
c) - 3/8*(sqrt(pi)*(2*c*x + b)*b^3*(erf(1/2*sqrt(-(2*c*x + b)^2/c
)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(7/2)) - 6*b^2*e^(1/4*(2*c*x +
b)^2/c)/c^(5/2) - 12*(2*c*x + b)^3*b*gamma(3/2, -1/4*(2*c*x + b)^
2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(7/2)) + 8*gamma(2, -1/4*(2*c*x
+ b)^2/c)/c^(3/2))*a^2*c^(3/2)*e^(a - 1/4*b^2/c) + 15/32*(sqrt(pi
)*(2*c*x + b)*b^4*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2
*c*x + b)^2/c)*c^(9/2)) - 8*b^3*e^(1/4*(2*c*x + b)^2/c)/c^(7/2) -
 24*(2*c*x + b)^3*b^2*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x
+ b)^2/c)^(3/2)*c^(9/2)) + 32*b*gamma(2, -1/4*(2*c*x + b)^2/c)/c^
(5/2) - 16*(2*c*x + b)^5*gamma(5/2, -1/4*(2*c*x + b)^2/c)/((-(2*c
*x + b)^2/c)^(5/2)*c^(9/2)))*a*b*c^(3/2)*e^(a - 1/4*b^2/c) - 9/64
*(sqrt(pi)*(2*c*x + b)*b^5*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/
(sqrt(-(2*c*x + b)^2/c)*c^(11/2)) - 10*b^4*e^(1/4*(2*c*x + b)^2/c
)/c^(9/2) - 40*(2*c*x + b)^3*b^3*gamma(3/2, -1/4*(2*c*x + b)^2/c)
/((-(2*c*x + b)^2/c)^(3/2)*c^(11/2)) + 80*b^2*gamma(2, -1/4*(2*c*
x + b)^2/c)/c^(7/2) - 80*(2*c*x + b)^5*b*gamma(5/2, -1/4*(2*c*x +
 b)^2/c)/((-(2*c*x + b)^2/c)^(5/2)*c^(11/2)) - 32*gamma(3, -1/4*(
2*c*x + b)^2/c)/c^(5/2))*b^2*c^(3/2)*e^(a - 1/4*b^2/c) - 3/32*(sq
rt(pi)*(2*c*x + b)*b^5*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqr
t(-(2*c*x + b)^2/c)*c^(11/2)) - 10*b^4*e^(1/4*(2*c*x + b)^2/c)/c^
(9/2) - 40*(2*c*x + b)^3*b^3*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-
```

```
(2*c*x + b)^2/c)^(3/2)*c^(11/2)) + 80*b^2*gamma(2, -1/4*(2*c*x +
b)^2/c)/c^(7/2) - 80*(2*c*x + b)^5*b*gamma(5/2, -1/4*(2*c*x + b)^
2/c)/((-(2*c*x + b)^2/c)^(5/2)*c^(11/2)) - 32*gamma(3, -1/4*(2*c*
x + b)^2/c)/c^(5/2))*a*c^(5/2)*e^(a - 1/4*b^2/c) + 7/128*(sqrt(pi
)*(2*c*x + b)*b^6*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2
*c*x + b)^2/c)*c^(13/2)) - 12*b^5*e^(1/4*(2*c*x + b)^2/c)/c^(11/2
) - 60*(2*c*x + b)^3*b^4*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-(2*c
*x + b)^2/c)^(3/2)*c^(13/2)) + 160*b^3*gamma(2, -1/4*(2*c*x + b)^
2/c)/c^(9/2) - 240*(2*c*x + b)^5*b^2*gamma(5/2, -1/4*(2*c*x + b)^
2/c)/((-(2*c*x + b)^2/c)^(5/2)*c^(13/2)) - 192*b*gamma(3, -1/4*(2
*c*x + b)^2/c)/c^(7/2) - 64*(2*c*x + b)^7*gamma(7/2, -1/4*(2*c*x
+ b)^2/c)/((-(2*c*x + b)^2/c)^(7/2)*c^(13/2)))*b*c^(5/2)*e^(a - 1
/4*b^2/c) - 1/128*(sqrt(pi)*(2*c*x + b)*b^7*(erf(1/2*sqrt(-(2*c*x
 + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(15/2)) - 14*b^6*e^(1/
4*(2*c*x + b)^2/c)/c^(13/2) - 84*(2*c*x + b)^3*b^5*gamma(3/2, -1/
4*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(15/2)) + 280*b^4*
gamma(2, -1/4*(2*c*x + b)^2/c)/c^(11/2) - 560*(2*c*x + b)^5*b^3*g
amma(5/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(5/2)*c^(15/2
)) - 672*b^2*gamma(3, -1/4*(2*c*x + b)^2/c)/c^(9/2) - 448*(2*c*x
+ b)^7*b*gamma(7/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(7/
2)*c^(15/2)) + 128*gamma(4, -1/4*(2*c*x + b)^2/c)/c^(7/2))*c^(7/2
)*e^(a - 1/4*b^2/c)
```

Fricas [A] time = 0.232797, size = 147, normalized size = 1.63

$$\left(c^3x^6 + 3\,bc^2x^5 + 3\,\left(b^2c + (a-1)c^2\right)x^4 + \left(b^3 + 6\,(a-1)bc\right)x^3 + a^3 + 3\,\left(a^2 - 2\,a + 2\right)bx + 3\,\left((a-1)b^2 + \left(a^2 - 2\,a + 2\right)c\right)x^2 -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^3*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fricas
```

```
[Out] (c^3*x^6 + 3*b*c^2*x^5 + 3*(b^2*c + (a - 1)*c^2)*x^4 + (b^3 + 6*(
a - 1)*b*c)*x^3 + a^3 + 3*(a^2 - 2*a + 2)*b*x + 3*((a - 1)*b^2 +
(a^2 - 2*a + 2)*c)*x^2 - 3*a^2 + 6*a - 6)*e^(c*x^2 + b*x + a)
```

Sympy [A] time = 0.320896, size = 160, normalized size = 1.78

$$\left(a^3 + 3a^2bx + 3a^2cx^2 - 3a^2 + 3ab^2x^2 + 6abcx^3 - 6abx + 3ac^2x^4 - 6acx^2 + 6a + b^3x^3 + 3b^2cx^4 - 3b^2x^2 + 3bc^2x^5 - 6bcx^3 + 6bx + c^3x^6 - 3c^2x^4 + 6cx^2 - 6\right)e^{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**3,x)
```

```
[Out] (a**3 + 3*a**2*b*x + 3*a**2*c*x**2 - 3*a**2 + 3*a*b**2*x**2 + 6*a
*b*c*x**3 - 6*a*b*x + 3*a*c**2*x**4 - 6*a*c*x**2 + 6*a + b**3*x**
3 + 3*b**2*c*x**4 - 3*b**2*x**2 + 3*b*c**2*x**5 - 6*b*c*x**3 + 6*
b*x + c**3*x**6 - 3*c**2*x**4 + 6*c*x**2 - 6)*exp(a + b*x + c*x**
2)
```

GIAC/XCAS [A] time = 0.259369, size = 360, normalized size = 4.

$$\frac{\left(c^6\left(2\,x + \frac{b}{c}\right)^6 - 3\,b^2c^4\left(2\,x + \frac{b}{c}\right)^4 + 12\,ac^5\left(2\,x + \frac{b}{c}\right)^4 - 12\,c^5\left(2\,x + \frac{b}{c}\right)^4 + 3\,b^4c^2\left(2\,x + \frac{b}{c}\right)^2 - 24\,ab^2c^3\left(2\,x + \frac{b}{c}\right)^2 + 48\,a^2c^4\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^3*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] 1/64*(c^6*(2*x + b/c)^6 - 3*b^2*c^4*(2*x + b/c)^4 + 12*a*c^5*(2*x
 + b/c)^4 - 12*c^5*(2*x + b/c)^4 + 3*b^4*c^2*(2*x + b/c)^2 - 24*a
*b^2*c^3*(2*x + b/c)^2 + 48*a^2*c^4*(2*x + b/c)^2 + 24*b^2*c^3*(2
*x + b/c)^2 - 96*a*c^4*(2*x + b/c)^2 - b^6 + 12*a*b^4*c - 48*a^2*
b^2*c^2 + 64*a^3*c^3 + 96*c^4*(2*x + b/c)^2 - 12*b^4*c + 96*a*b^2
*c^2 - 192*a^2*c^3 - 96*b^2*c^2 + 384*a*c^3 - 384*c^3)*e^(c*x^2 +
 b*x + a)/c^3
```

3.604 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=64

$$e^{a+bx+cx^2}\left(a+bx+cx^2\right)^2-2e^{a+bx+cx^2}\left(a+bx+cx^2\right)+2e^{a+bx+cx^2}$$

```
[Out] 2*E^(a + b*x + c*x^2) - 2*E^(a + b*x + c*x^2)*(a + b*x + c*x^2) +
 E^(a + b*x + c*x^2)*(a + b*x + c*x^2)^2
```

Rubi [A] time = 0.244845, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$

$$e^{a+bx+cx^2}\left(a+bx+cx^2\right)^2-2e^{a+bx+cx^2}\left(a+bx+cx^2\right)+2e^{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] 2*E^(a + b*x + c*x^2) - 2*E^(a + b*x + c*x^2)*(a + b*x + c*x^2) +
 E^(a + b*x + c*x^2)*(a + b*x + c*x^2)^2
```

Rubi in Sympy [A] time = 78.5493, size = 60, normalized size = 0.94

$$\left(a+bx+cx^2\right)^2e^{a+bx+cx^2}-2\left(a+bx+cx^2\right)e^{a+bx+cx^2}+2e^{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**2,x)
```

```
[Out] (a + b*x + c*x**2)**2*exp(a + b*x + c*x**2) - 2*(a + b*x + c*x**2
)*exp(a + b*x + c*x**2) + 2*exp(a + b*x + c*x**2)
```

Mathematica [A] time = 0.0166974, size = 36, normalized size = 0.56

$$e^{a+x(b+cx)}\left((a+x(b+cx))^2-2(a+x(b+cx))+2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] E^(a + x*(b + c*x))*(2 - 2*(a + x*(b + c*x)) + (a + x*(b + c*x))^
2)
```

Maple [A] time = 0.007, size = 64, normalized size = 1.

$$\left(c^2x^4+2\,cbx^3+2\,acx^2+b^2x^2+2\,abx-2\,cx^2+a^2-2\,bx-2\,a+2\right)e^{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^2,x)
```

```
[Out] (c^2*x^4+2*b*c*x^3+2*a*c*x^2+b^2*x^2+2*a*b*x-2*c*x^2+a^2-2*b*x-2*
a+2)*exp(c*x^2+b*x+a)
```

Maxima [A] time = 1.07892, size = 1651, normalized size = 25.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^2*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="maxima
```

```
[Out] 1/2*sqrt(pi)*a^2*b*erf(sqrt(-c)*x - 1/2*b/sqrt(-c))*e^(a - 1/4*b^
2/c)/sqrt(-c) - 1/2*(sqrt(pi)*(2*c*x + b)*b*(erf(1/2*sqrt(-(2*c*x
 + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(3/2)) - 2*e^(1/4*(2*c
*x + b)^2/c)/sqrt(c))*a*b^2*e^(a - 1/4*b^2/c)/sqrt(c) + 1/8*(sqrt
(pi)*(2*c*x + b)*b^2*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(
-(2*c*x + b)^2/c)*c^(5/2)) - 4*b*e^(1/4*(2*c*x + b)^2/c)/c^(3/2)
- 4*(2*c*x + b)^3*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x + b)
^2/c)^(3/2)*c^(5/2)))*b^3*e^(a - 1/4*b^2/c)/sqrt(c) - 1/2*(sqrt(p
i)*(2*c*x + b)*b*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*
c*x + b)^2/c)*c^(3/2)) - 2*e^(1/4*(2*c*x + b)^2/c)/sqrt(c))*a^2*s
qrt(c)*e^(a - 1/4*b^2/c) + 3/4*(sqrt(pi)*(2*c*x + b)*b^2*(erf(1/2
*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(5/2)) -
4*b*e^(1/4*(2*c*x + b)^2/c)/c^(3/2) - 4*(2*c*x + b)^3*gamma(3/2,
-1/4*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(5/2)))*a*b*sqr
t(c)*e^(a - 1/4*b^2/c) - 1/4*(sqrt(pi)*(2*c*x + b)*b^3*(erf(1/2*s
qrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(7/2)) - 6*
b^2*e^(1/4*(2*c*x + b)^2/c)/c^(5/2) - 12*(2*c*x + b)^3*b*gamma(3/
2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(7/2)) + 8*g
amma(2, -1/4*(2*c*x + b)^2/c)/c^(3/2))*b^2*sqrt(c)*e^(a - 1/4*b^2
/c) - 1/4*(sqrt(pi)*(2*c*x + b)*b^3*(erf(1/2*sqrt(-(2*c*x + b)^2/
c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(7/2)) - 6*b^2*e^(1/4*(2*c*x +
 b)^2/c)/c^(5/2) - 12*(2*c*x + b)^3*b*gamma(3/2, -1/4*(2*c*x + b)
^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(7/2)) + 8*gamma(2, -1/4*(2*c*x
 + b)^2/c)/c^(3/2))*a*c^(3/2)*e^(a - 1/4*b^2/c) + 5/32*(sqrt(pi)*
(2*c*x + b)*b^4*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c
*x + b)^2/c)*c^(9/2)) - 8*b^3*e^(1/4*(2*c*x + b)^2/c)/c^(7/2) - 2
4*(2*c*x + b)^3*b^2*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x +
b)^2/c)^(3/2)*c^(9/2)) + 32*b*gamma(2, -1/4*(2*c*x + b)^2/c)/c^(5
/2) - 16*(2*c*x + b)^5*gamma(5/2, -1/4*(2*c*x + b)^2/c)/((-(2*c*x
 + b)^2/c)^(5/2)*c^(9/2)))*b*c^(3/2)*e^(a - 1/4*b^2/c) - 1/32*(sq
rt(pi)*(2*c*x + b)*b^5*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqr
t(-(2*c*x + b)^2/c)*c^(11/2)) - 10*b^4*e^(1/4*(2*c*x + b)^2/c)/c^
(9/2) - 40*(2*c*x + b)^3*b^3*gamma(3/2, -1/4*(2*c*x + b)^2/c)/((-
(2*c*x + b)^2/c)^(3/2)*c^(11/2)) + 80*b^2*gamma(2, -1/4*(2*c*x +
b)^2/c)/c^(7/2) - 80*(2*c*x + b)^5*b*gamma(5/2, -1/4*(2*c*x + b)^
2/c)/((-(2*c*x + b)^2/c)^(5/2)*c^(11/2)) - 32*gamma(3, -1/4*(2*c*
x + b)^2/c)/c^(5/2))*c^(5/2)*e^(a - 1/4*b^2/c)
```

Fricas [A] time = 0.264676, size = 74, normalized size = 1.16

$$\left(c^{2} x^{4} + 2 \, b c x^{3} + 2 \, {\left(a - 1\right)} b x + {\left(b^{2} + 2 \, {\left(a - 1\right)} c\right)} x^{2} + a^{2} - 2 \, a + 2\right)} e^{\left(c x^{2} + b x + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^2*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fricas
```

```
[Out] (c^2*x^4 + 2*b*c*x^3 + 2*(a - 1)*b*x + (b^2 + 2*(a - 1)*c)*x^2 +
a^2 - 2*a + 2)*e^(c*x^2 + b*x + a)
```

Sympy [A] time = 0.22048, size = 68, normalized size = 1.06

$$\left(a^{2}+2abx+2acx^{2}-2a+b^{2}x^{2}+2bcx^{3}-2bx+c^{2}x^{4}-2cx^{2}+2\right)e^{a+bx+cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**2,x)
```

```
[Out] (a**2 + 2*a*b*x + 2*a*c*x**2 - 2*a + b**2*x**2 + 2*b*c*x**3 - 2*b
*x + c**2*x**4 - 2*c*x**2 + 2)*exp(a + b*x + c*x**2)
```

GIAC/XCAS [A] time = 0.290573, size = 161, normalized size = 2.52

$$\frac{\left(c^{4}\left(2x+\frac{b}{c}\right)^{4}-2b^{2}c^{2}\left(2x+\frac{b}{c}\right)^{2}+8ac^{3}\left(2x+\frac{b}{c}\right)^{2}-8c^{3}\left(2x+\frac{b}{c}\right)^{2}+b^{4}-8ab^{2}c+16a^{2}c^{2}+8b^{2}c-32ac^{2}+32c^{2}\right)e^{\left(cx^{2}+\right.}}{16c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)^2*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] 1/16*(c^4*(2*x + b/c)^4 - 2*b^2*c^2*(2*x + b/c)^2 + 8*a*c^3*(2*x
+ b/c)^2 - 8*c^3*(2*x + b/c)^2 + b^4 - 8*a*b^2*c + 16*a^2*c^2 + 8
*b^2*c - 32*a*c^2 + 32*c^2)*e^(c*x^2 + b*x + a)/c^2
```

3.605 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=38

$$e^{a+bx+cx^2}\left(a+bx+cx^2\right)-e^{a+bx+cx^2}$$

```
[Out] -E^(a + b*x + c*x^2) + E^(a + b*x + c*x^2)*(a + b*x + c*x^2)
```

Rubi [A] time = 0.147627, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$

$$e^{a+bx+cx^2}\left(a+bx+cx^2\right)-e^{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2),x]

[Out] -E^(a + b*x + c*x^2) + E^(a + b*x + c*x^2)*(a + b*x + c*x^2)
```

Rubi in Sympy [A] time = 32.2764, size = 32, normalized size = 0.84

$$\left(a+bx+cx^2\right)e^{a+bx+cx^2}-e^{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a),x)

[Out] (a + b*x + c*x**2)*exp(a + b*x + c*x**2) - exp(a + b*x + c*x**2)
```

Mathematica [A] time = 0.0208447, size = 23, normalized size = 0.61

$$e^{a+x(b+cx)}\left(a+bx+cx^2-1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2),x]

[Out] E^(a + x*(b + c*x))*(-1 + a + b*x + c*x^2)
```

Maple [A] time = 0.005, size = 24, normalized size = 0.6

$$\left(cx^2+bx+a-1\right)e^{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a),x)

[Out] (c*x^2+b*x+a-1)*exp(c*x^2+b*x+a)
```

Maxima [A] time = 0.928268, size = 676, normalized size = 17.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(pi)*a*b*erf(sqrt(-c)*x - 1/2*b/sqrt(-c))*e^(a - 1/4*b^2/
c)/sqrt(-c) - 1/4*(sqrt(pi)*(2*c*x + b)*b*(erf(1/2*sqrt(-(2*c*x +
 b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(3/2)) - 2*e^(1/4*(2*c*x
 + b)^2/c)/sqrt(c))*b^2*e^(a - 1/4*b^2/c)/sqrt(c) - 1/2*(sqrt(pi)
*(2*c*x + b)*b*(erf(1/2*sqrt(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c*
x + b)^2/c)*c^(3/2)) - 2*e^(1/4*(2*c*x + b)^2/c)/sqrt(c))*a*sqrt(
c)*e^(a - 1/4*b^2/c) + 3/8*(sqrt(pi)*(2*c*x + b)*b^2*(erf(1/2*sqr
t(-(2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(5/2)) - 4*b*
e^(1/4*(2*c*x + b)^2/c)/c^(3/2) - 4*(2*c*x + b)^3*gamma(3/2, -1/4
*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(5/2)))*b*sqrt(c)*e
^(a - 1/4*b^2/c) - 1/8*(sqrt(pi)*(2*c*x + b)*b^3*(erf(1/2*sqrt(-(
2*c*x + b)^2/c)) - 1)/(sqrt(-(2*c*x + b)^2/c)*c^(7/2)) - 6*b^2*e^
(1/4*(2*c*x + b)^2/c)/c^(5/2) - 12*(2*c*x + b)^3*b*gamma(3/2, -1/
4*(2*c*x + b)^2/c)/((-(2*c*x + b)^2/c)^(3/2)*c^(7/2)) + 8*gamma(2
, -1/4*(2*c*x + b)^2/c)/c^(3/2))*c^(3/2)*e^(a - 1/4*b^2/c)
```

Fricas [A] time = 0.245006, size = 31, normalized size = 0.82

$$\left(cx^2 + bx + a - 1\right)e^{\left(cx^2 + bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] (c*x^2 + b*x + a - 1)*e^(c*x^2 + b*x + a)
```

Sympy [A] time = 0.146431, size = 22, normalized size = 0.58

$$\left(a + bx + cx^2 - 1\right) e^{a + bx + cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a),x)
```

```
[Out] (a + b*x + c*x**2 - 1)*exp(a + b*x + c*x**2)
```

GIAC/XCAS [A] time = 0.295464, size = 59, normalized size = 1.55

$$\frac{\left(c^2\left(2\,x + \frac{b}{c}\right)^2 - b^2 + 4\,ac - 4\,c\right)e^{\left(cx^2 + bx + a\right)}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] 1/4*(c^2*(2*x + b/c)^2 - b^2 + 4*a*c - 4*c)*e^(c*x^2 + b*x + a)/c
```

3.606 $\int e^{a+bx+cx^2}(b+2cx)\,dx$

Optimal. Leaf size=12

$$e^{a+bx+cx^2}$$

```
[Out] E^(a + b*x + c*x^2)
```

Rubi [A] time = 0.0278753, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$e^{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x),x]

[Out] E^(a + b*x + c*x^2)
```

Rubi in Sympy [A] time = 3.41435, size = 10, normalized size = 0.83

$$e^{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b),x)

[Out] exp(a + b*x + c*x**2)
```

Mathematica [A] time = 0.006791, size = 12, normalized size = 1.

$$e^{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x),x]

[Out] E^(a + b*x + c*x^2)
```

Maple [A] time = 0.003, size = 12, normalized size = 1.

$$e^{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b),x)

[Out] exp(c*x^2+b*x+a)
```

Maxima [A] time = 0.786515, size = 15, normalized size = 1.25

$$e^{\left(cx^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] e^(c*x^2 + b*x + a)
```

Fricas [A] time = 0.253149, size = 15, normalized size = 1.25

$$e^{\left(cx^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] e^(c*x^2 + b*x + a)
```

Sympy [A] time = 0.094107, size = 10, normalized size = 0.83

$$e^{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b),x)
```

```
[Out] exp(a + b*x + c*x**2)
```

GIAC/XCAS [A] time = 0.242233, size = 15, normalized size = 1.25

$$e^{\left(cx^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] e^(c*x^2 + b*x + a)
```

3.607 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=11

$$\text{ExpIntegralEi}\left(a+bx+cx^2\right)$$

```
[Out] ExpIntegralEi[a + b*x + c*x^2]
```

Rubi [A] time = 0.266157, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$

$$\text{ExpIntegralEi}\left(a+bx+cx^2\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2),x]

[Out] ExpIntegralEi[a + b*x + c*x^2]
```

Rubi in Sympy [A] time = 79.4201, size = 10, normalized size = 0.91

$$\text{Ei}\left(a+bx+cx^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a),x)

[Out] Ei(a + b*x + c*x**2)
```

Mathematica [A] time = 0.008948, size = 10, normalized size = 0.91

$$\text{ExpIntegralEi}(a+x(b+cx))$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2),x]

[Out] ExpIntegralEi[a + x*(b + c*x)]
```

Maple [A] time = 0.008, size = 19, normalized size = 1.7

$$-Ei\left(1,-cx^2-bx-a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a),x)

[Out] -Ei(1,-c*x^2-b*x-a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a), x)
```

Fricas [A] time = 0.232682, size = 15, normalized size = 1.36

$$\mathrm{Ei}\left(cx^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a),x, algorithm="fricas")
```

```
[Out] Ei(c*x^2 + b*x + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a), x)
```

3.608 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{(a+bx+cx^2)^2}\,dx$

Optimal. Leaf size=38

$$\text{ExpIntegralEi}\left(a+bx+cx^2\right)-\frac{e^{a+bx+cx^2}}{a+bx+cx^2}$$

```
[Out] -(E^(a + b*x + c*x^2)/(a + b*x + c*x^2)) + ExpIntegralEi[a + b*x
+ c*x^2]
```

Rubi [A] time = 0.293068, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097

$$\text{ExpIntegralEi}\left(a+bx+cx^2\right)-\frac{e^{a+bx+cx^2}}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(E^(a + b*x + c*x^2)/(a + b*x + c*x^2)) + ExpIntegralEi[a + b*x
+ c*x^2]
```

Rubi in Sympy [A] time = 82.2818, size = 32, normalized size = 0.84

$$\text{Ei}\left(a+bx+cx^2\right)-\frac{e^{a+bx+cx^2}}{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Ei(a + b*x + c*x**2) - exp(a + b*x + c*x**2)/(a + b*x + c*x**2)
```

Mathematica [A] time = 0.0314182, size = 35, normalized size = 0.92

$$\text{ExpIntegralEi}(a+x(b+cx))-\frac{e^{a+x(b+cx)}}{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(E^(a + x*(b + c*x))/(a + x*(b + c*x))) + ExpIntegralEi[a + x*(b
 + c*x)]
```

Maple [A] time = 0.006, size = 45, normalized size = 1.2

$$-\frac{e^{cx^2+bx+a}}{cx^2+bx+a}-Ei\left(1,-cx^2-bx-a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -exp(c*x^2+b*x+a)/(c*x^2+b*x+a)-Ei(1,-c*x^2-b*x-a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^2,x, algorithm="maxima
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^2, x)
```

Fricas [A] time = 0.247456, size = 66, normalized size = 1.74

$$\frac{\left(cx^2+bx+a\right)\mathrm{Ei}\left(cx^2+bx+a\right)-e^{\left(cx^2+bx+a\right)}}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^2,x, algorithm="fricas
```

```
[Out] ((c*x^2 + b*x + a)*Ei(c*x^2 + b*x + a) - e^(c*x^2 + b*x + a))/(c*
x^2 + b*x + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^2,x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^2, x)
```

3.609 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{(a+bx+cx^2)^3}\,dx$

Optimal. Leaf size=72

$$\frac{1}{2}\text{ExpIntegralEi}\left(a+bx+cx^2\right)-\frac{e^{a+bx+cx^2}}{2\,(a+bx+cx^2)}-\frac{e^{a+bx+cx^2}}{2\,(a+bx+cx^2)^2}$$

```
[Out] -E^(a + b*x + c*x^2)/(2*(a + b*x + c*x^2)^2) - E^(a + b*x + c*x^2
)/(2*(a + b*x + c*x^2)) + ExpIntegralEi[a + b*x + c*x^2]/2
```

Rubi [A] time = 0.372031, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097

$$\frac{1}{2}\text{ExpIntegralEi}\left(a+bx+cx^2\right)-\frac{e^{a+bx+cx^2}}{2\,(a+bx+cx^2)}-\frac{e^{a+bx+cx^2}}{2\,(a+bx+cx^2)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -E^(a + b*x + c*x^2)/(2*(a + b*x + c*x^2)^2) - E^(a + b*x + c*x^2
)/(2*(a + b*x + c*x^2)) + ExpIntegralEi[a + b*x + c*x^2]/2
```

Rubi in Sympy [A] time = 86.1616, size = 65, normalized size = 0.9

$$\frac{\text{Ei}\left(a+bx+cx^2\right)}{2}-\frac{e^{a+bx+cx^2}}{2\,(a+bx+cx^2)}-\frac{e^{a+bx+cx^2}}{2\,(a+bx+cx^2)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Ei(a + b*x + c*x**2)/2 - exp(a + b*x + c*x**2)/(2*(a + b*x + c*x*
*2)) - exp(a + b*x + c*x**2)/(2*(a + b*x + c*x**2)**2)
```

Mathematica [A] time = 0.0520369, size = 50, normalized size = 0.69

$$\frac{1}{2}\left(\text{ExpIntegralEi}(a+x(b+cx))-\frac{e^{a+x(b+cx)}\left(a+bx+cx^2+1\right)}{(a+x(b+cx))^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (-((E^(a + x*(b + c*x))*(1 + a + b*x + c*x^2))/(a + x*(b + c*x))^
2) + ExpIntegralEi[a + x*(b + c*x)])/2
```

Maple [A] time = 0.006, size = 70, normalized size = 1.

$$-\frac{e^{cx^2+bx+a}}{2\,\left(cx^2+bx+a\right)^2}-\frac{e^{cx^2+bx+a}}{2\,cx^2+2\,bx+2\,a}-\frac{Ei\left(1,-cx^2-bx-a\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -1/2*exp(c*x^2+b*x+a)/(c*x^2+b*x+a)^2-1/2*exp(c*x^2+b*x+a)/(c*x^2
+b*x+a)-1/2*Ei(1,-c*x^2-b*x-a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^3,x, algorithm="maxima
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^3, x)
```

Fricas [A] time = 0.251249, size = 150, normalized size = 2.08

$$\frac{\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)\mathrm{Ei}\left(cx^2+bx+a\right)-\left(cx^2+bx+a+1\right)e^{\left(cx^2+bx+a\right)}}{2\left(c^2x^4+2\,bcx^3+2\,abx+(b^2+2\,ac)x^2+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^3,x, algorithm="fricas
```

```
[Out] 1/2*((c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)*Ei
(c*x^2 + b*x + a) - (c*x^2 + b*x + a + 1)*e^(c*x^2 + b*x + a))/(c
^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^3,x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^3, x)
```

3.610 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^{7/2}\,dx$

Optimal. Leaf size=142

$$\frac{105}{16}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)+e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{7/2}-\frac{7}{2}e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{5/2}+\frac{35}{4}e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{3/2}-\frac{105}{8}e^{a+bx+cx^2}\sqrt{a+bx+cx^2}$$

```
[Out] (-105*E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2])/8 + (35*E^(a + b
*x + c*x^2)*(a + b*x + c*x^2)^(3/2))/4 - (7*E^(a + b*x + c*x^2)*(
a + b*x + c*x^2)^(5/2))/2 + E^(a + b*x + c*x^2)*(a + b*x + c*x^2)
^(7/2) + (105*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]])/16
```

Rubi [A] time = 1.01358, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$\frac{105}{16}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)+e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{7/2}-\frac{7}{2}e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{5/2}+\frac{35}{4}e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{3/2}-\frac{105}{8}e^{a+bx+cx^2}\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-105*E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2])/8 + (35*E^(a + b
*x + c*x^2)*(a + b*x + c*x^2)^(3/2))/4 - (7*E^(a + b*x + c*x^2)*(
a + b*x + c*x^2)^(5/2))/2 + E^(a + b*x + c*x^2)*(a + b*x + c*x^2)
^(7/2) + (105*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]])/16
```

Rubi in Sympy [A] time = 86.1223, size = 134, normalized size = 0.94

$$\left(a+bx+cx^2\right)^{\frac{7}{2}}e^{a+bx+cx^2}-\frac{7\left(a+bx+cx^2\right)^{\frac{5}{2}}e^{a+bx+cx^2}}{2}+\frac{35\left(a+bx+cx^2\right)^{\frac{3}{2}}e^{a+bx+cx^2}}{4}-\frac{105\sqrt{a+bx+cx^2}e^{a+bx+cx^2}}{8}+\frac{105\sqrt{\pi}\operatorname{erfi}\left(\sqrt{a+bx+cx^2}\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] (a + b*x + c*x**2)**(7/2)*exp(a + b*x + c*x**2) - 7*(a + b*x + c*
x**2)**(5/2)*exp(a + b*x + c*x**2)/2 + 35*(a + b*x + c*x**2)**(3/
2)*exp(a + b*x + c*x**2)/4 - 105*sqrt(a + b*x + c*x**2)*exp(a + b
*x + c*x**2)/8 + 105*sqrt(pi)*erfi(sqrt(a + b*x + c*x**2))/16
```

Mathematica [A] time = 0.177632, size = 91, normalized size = 0.64

$$\frac{105}{16}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)+\frac{1}{8}e^{a+x(b+cx)}\sqrt{a+x(b+cx)}\left(8(a+x(b+cx))^3-28(a+x(b+cx))^2+70(a+x(b+cx))-105\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (E^(a + x*(b + c*x))*Sqrt[a + x*(b + c*x)]*(-105 + 70*(a + x*(b +
 c*x)) - 28*(a + x*(b + c*x))^2 + 8*(a + x*(b + c*x))^3))/8 + (10
5*Sqrt[Pi]*Erfi[Sqrt[a + x*(b + c*x)]])/16
```

Maple [A] time = 0.011, size = 119, normalized size = 0.8

$$\frac{35\,e^{cx^2+bx+a}}{4}\left(cx^2+bx+a\right)^{\frac{3}{2}}-\frac{7\,e^{cx^2+bx+a}}{2}\left(cx^2+bx+a\right)^{\frac{5}{2}}+e^{cx^2+bx+a}\left(cx^2+bx+a\right)^{\frac{7}{2}}+\frac{105\sqrt{\pi}}{16}\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)-\frac{105\,e^{cx^2+bx+a}}{8}\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 35/4*exp(c*x^2+b*x+a)*(c*x^2+b*x+a)^(3/2)-7/2*exp(c*x^2+b*x+a)*(c
*x^2+b*x+a)^(5/2)+exp(c*x^2+b*x+a)*(c*x^2+b*x+a)^(7/2)+105/16*erf
i((c*x^2+b*x+a)^(1/2))*Pi^(1/2)-105/8*exp(c*x^2+b*x+a)*(c*x^2+b*x
+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2+bx+a\right)^{\frac{7}{2}}(2\,cx+b)e^{\left(cx^2+bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)^(7/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="ma
```

```
[Out] integrate((c*x^2 + b*x + a)^(7/2)*(2*c*x + b)*e^(c*x^2 + b*x + a)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

integral $\left(\left(2\,c^4x^7+7\,bc^3x^6+3\left(3\,b^2c^2+2\,ac^3\right)x^5+5\left(b^3c+3\,abc^2\right)x^4+a^3b+\left(b^4+12\,ab^2c+6\,a^2c^2\right)x^3+3\left(ab^3+3\,a^2bc\right)x\right.\right.$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)^(7/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fr
```

```
[Out] integral((2*c^4*x^7 + 7*b*c^3*x^6 + 3*(3*b^2*c^2 + 2*a*c^3)*x^5 +
 5*(b^3*c + 3*a*b*c^2)*x^4 + a^3*b + (b^4 + 12*a*b^2*c + 6*a^2*c^
2)*x^3 + 3*(a*b^3 + 3*a^2*b*c)*x^2 + (3*a^2*b^2 + 2*a^3*c)*x)*sqr
t(c*x^2 + b*x + a)*e^(c*x^2 + b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (cx^2 + bx + a)^{\frac{7}{2}} (2\,cx + b)e^{\left(cx^2 + bx + a\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^(7/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="gi
```

```
[Out] integrate((c*x^2 + b*x + a)^(7/2)*(2*c*x + b)*e^(c*x^2 + b*x + a)
, x)
```

3.611 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=112

$$-\frac{15}{8}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)+e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{5/2}-\frac{5}{2}e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{3/2}+\frac{15}{4}e^{a+bx+cx^2}\sqrt{a+bx+cx^2}$$

```
[Out] (15*E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2])/4 - (5*E^(a + b*x
+ c*x^2)*(a + b*x + c*x^2)^(3/2))/2 + E^(a + b*x + c*x^2)*(a + b*
x + c*x^2)^(5/2) - (15*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]])/8
```

Rubi [A] time = 0.722838, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$-\frac{15}{8}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)+e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{5/2}-\frac{5}{2}e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{3/2}+\frac{15}{4}e^{a+bx+cx^2}\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (15*E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2])/4 - (5*E^(a + b*x
+ c*x^2)*(a + b*x + c*x^2)^(3/2))/2 + E^(a + b*x + c*x^2)*(a + b*
x + c*x^2)^(5/2) - (15*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]])/8
```

Rubi in Sympy [A] time = 82.0956, size = 105, normalized size = 0.94

$$\left(a+bx+cx^2\right)^{\frac{5}{2}}e^{a+bx+cx^2}-\frac{5\left(a+bx+cx^2\right)^{\frac{3}{2}}e^{a+bx+cx^2}}{2}+\frac{15\sqrt{a+bx+cx^2}e^{a+bx+cx^2}}{4}-\frac{15\sqrt{\pi}\,\text{erfi}\left(\sqrt{a+bx+cx^2}\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] (a + b*x + c*x**2)**(5/2)*exp(a + b*x + c*x**2) - 5*(a + b*x + c*
x**2)**(3/2)*exp(a + b*x + c*x**2)/2 + 15*sqrt(a + b*x + c*x**2)*
exp(a + b*x + c*x**2)/4 - 15*sqrt(pi)*erfi(sqrt(a + b*x + c*x**2)
)/8
```

Mathematica [A] time = 0.165651, size = 78, normalized size = 0.7

$$\frac{1}{4}e^{a+x(b+cx)}\sqrt{a+x(b+cx)}\left(4(a+x(b+cx))^2-10(a+x(b+cx))+15\right)-\frac{15}{8}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (E^(a + x*(b + c*x))*Sqrt[a + x*(b + c*x)]*(15 - 10*(a + x*(b + c
*x)) + 4*(a + x*(b + c*x))^2))/4 - (15*Sqrt[Pi]*Erfi[Sqrt[a + x*(
```

```
b + c*x)]])/8
```

Maple [A] time = 0.01, size = 94, normalized size = 0.8

$$-\frac{5\,\mathrm{e}^{c x^{2}+b x+a}}{2}\left(c x^{2}+b x+a\right)^{\frac{3}{2}}+\mathrm{e}^{c x^{2}+b x+a}\left(c x^{2}+b x+a\right)^{\frac{5}{2}}-\frac{15\sqrt{\pi}}{8}\mathit{erfi}\left(\sqrt{c x^{2}+b x+a}\right)+\frac{15\,\mathrm{e}^{c x^{2}+b x+a}}{4}\sqrt{c x^{2}+b x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -5/2*exp(c*x^2+b*x+a)*(c*x^2+b*x+a)^(3/2)+exp(c*x^2+b*x+a)*(c*x^2
+b*x+a)^(5/2)-15/8*erfi((c*x^2+b*x+a)^(1/2))*Pi^(1/2)+15/4*exp(c*
x^2+b*x+a)*(c*x^2+b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\left(c x^{2}+b x+a\right)^{\frac{5}{2}}(2\,c x+b)e^{\left(c x^{2}+b x+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^(5/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="ma
```

```
[Out] integrate((c*x^2 + b*x + a)^(5/2)*(2*c*x + b)*e^(c*x^2 + b*x + a)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(2\,c^{3}x^{5}+5\,bc^{2}x^{4}+4\left(b^{2}c+ac^{2}\right)x^{3}+a^{2}b+\left(b^{3}+6\,abc\right)x^{2}+2\left(ab^{2}+a^{2}c\right)x\right)\sqrt{cx^{2}+bx+a}e^{\left(cx^{2}+bx+a\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^(5/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fr
```

```
[Out] integral((2*c^3*x^5 + 5*b*c^2*x^4 + 4*(b^2*c + a*c^2)*x^3 + a^2*b
 + (b^3 + 6*a*b*c)*x^2 + 2*(a*b^2 + a^2*c)*x)*sqrt(c*x^2 + b*x +
a)*e^(c*x^2 + b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2 + bx + a\right)^{\frac{5}{2}}(2\,cx + b)e^{\left(cx^2+bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2 + b*x + a)^(5/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="gi
```

```
[Out] integrate((c*x^2 + b*x + a)^(5/2)*(2*c*x + b)*e^(c*x^2 + b*x + a)
, x)
```

3.612 $\int e^{a+bx+cx^2}(b+2cx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=82

$$\frac{3}{4}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)+e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{3/2}-\frac{3}{2}e^{a+bx+cx^2}\sqrt{a+bx+cx^2}$$

```
[Out] (-3*E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2])/2 + E^(a + b*x + c
*x^2)*(a + b*x + c*x^2)^(3/2) + (3*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c
*x^2]])/4
```

Rubi [A] time = 0.555962, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$\frac{3}{4}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)+e^{a+bx+cx^2}\left(a+bx+cx^2\right)^{3/2}-\frac{3}{2}e^{a+bx+cx^2}\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-3*E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2])/2 + E^(a + b*x + c
*x^2)*(a + b*x + c*x^2)^(3/2) + (3*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c
*x^2]])/4
```

Rubi in Sympy [A] time = 78.8483, size = 76, normalized size = 0.93

$$\left(a+bx+cx^2\right)^{\frac{3}{2}}e^{a+bx+cx^2}-\frac{3\sqrt{a+bx+cx^2}e^{a+bx+cx^2}}{2}+\frac{3\sqrt{\pi}\operatorname{erfi}\left(\sqrt{a+bx+cx^2}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] (a + b*x + c*x**2)**(3/2)*exp(a + b*x + c*x**2) - 3*sqrt(a + b*x
+ c*x**2)*exp(a + b*x + c*x**2)/2 + 3*sqrt(pi)*erfi(sqrt(a + b*x
+ c*x**2))/4
```

Mathematica [A] time = 0.121832, size = 67, normalized size = 0.82

$$\frac{1}{4}\left(3\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)+2e^{a+x(b+cx)}\sqrt{a+x(b+cx)}\left(2a+2bx+2cx^2-3\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*E^(a + x*(b + c*x))*(-3 + 2*a + 2*b*x + 2*c*x^2)*Sqrt[a + x*(b
 + c*x)] + 3*Sqrt[Pi]*Erfi[Sqrt[a + x*(b + c*x)]])/4
```

Maple [A] time = 0.01, size = 69, normalized size = 0.8

$$e^{cx^2+bx+a}\left(cx^2+bx+a\right)^{\frac{3}{2}}+\frac{3\sqrt{\pi}}{4}\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)-\frac{3\,e^{cx^2+bx+a}}{2}\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] exp(c*x^2+b*x+a)*(c*x^2+b*x+a)^(3/2)+3/4*erfi((c*x^2+b*x+a)^(1/2)
)*Pi^(1/2)-3/2*exp(c*x^2+b*x+a)*(c*x^2+b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2 + bx + a\right)^{\frac{3}{2}}(2\,cx + b)e^{\left(cx^2+bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="ma
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)*e^(c*x^2 + b*x + a)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(2\,c^2x^3 + 3\,bcx^2 + ab + \left(b^2 + 2\,ac\right)x\right)\sqrt{cx^2 + bx + a}e^{\left(cx^2+bx+a\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fr
```

```
[Out] integral((2*c^2*x^3 + 3*b*c*x^2 + a*b + (b^2 + 2*a*c)*x)*sqrt(c*x
^2 + b*x + a)*e^(c*x^2 + b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2 + bx + a\right)^{\frac{3}{2}}(2\,cx + b)e^{\left(cx^2+bx+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="gi
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)*e^(c*x^2 + b*x + a)
, x)
```

3.613 $\int e^{a+bx+cx^2}(b+2cx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=52

$$e^{a+bx+cx^2}\sqrt{a+bx+cx^2}-\frac{1}{2}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)$$

```
[Out] E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2] - (Sqrt[Pi]*Erfi[Sqrt[a
 + b*x + c*x^2]])/2
```

Rubi [A] time = 0.346253, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$e^{a+bx+cx^2}\sqrt{a+bx+cx^2}-\frac{1}{2}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x + c*x^2)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] E^(a + b*x + c*x^2)*Sqrt[a + b*x + c*x^2] - (Sqrt[Pi]*Erfi[Sqrt[a
 + b*x + c*x^2]])/2
```

Rubi in Sympy [A] time = 76.8862, size = 46, normalized size = 0.88

$$\sqrt{a+bx+cx^2}e^{a+bx+cx^2}-\frac{\sqrt{\pi}\operatorname{erfi}\left(\sqrt{a+bx+cx^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] sqrt(a + b*x + c*x**2)*exp(a + b*x + c*x**2) - sqrt(pi)*erfi(sqrt
(a + b*x + c*x**2))/2
```

Mathematica [A] time = 0.0388514, size = 49, normalized size = 0.94

$$e^{a+x(b+cx)}\sqrt{a+x(b+cx)}-\frac{1}{2}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + b*x + c*x^2)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] E^(a + x*(b + c*x))*Sqrt[a + x*(b + c*x)] - (Sqrt[Pi]*Erfi[Sqrt[a
 + x*(b + c*x)]])/2
```

Maple [A] time = 0.01, size = 44, normalized size = 0.9

$$-\frac{\sqrt{\pi}}{2}\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)+e^{cx^2+bx+a}\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/2*erfi((c*x^2+b*x+a)^(1/2))*Pi^(1/2)+exp(c*x^2+b*x+a)*(c*x^2+b
*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{cx^2 + bx + a}(2\,cx + b)e^{(cx^2+bx+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="maxi
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),
x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{cx^2 + bx + a}(2\,cx + b)e^{(cx^2+bx+a)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="fric
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a), x
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.243511, size = 63, normalized size = 1.21

$$-\frac{1}{2}\,\sqrt{\pi}i\,\mathrm{erf}\left(-\sqrt{cx^2 + bx + a}i\right) + \sqrt{cx^2 + bx + a}e^{(cx^2+bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*e^(c*x^2 + b*x + a),x, algorithm="giac
```

```
[Out] -1/2*sqrt(pi)*i*erf(-sqrt(c*x^2 + b*x + a)*i) + sqrt(c*x^2 + b*x
+ a)*e^(c*x^2 + b*x + a)
```

3.614 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=21

$$\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)$$

```
[Out] Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]]
```

Rubi [A] time = 0.400767, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/Sqrt[a + b*x + c*x^2],x]

[Out] Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]]
```

Rubi in Sympy [A] time = 77.2556, size = 19, normalized size = 0.9

$$\sqrt{\pi}\,\text{erfi}\left(\sqrt{a+bx+cx^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(1/2),x)

[Out] sqrt(pi)*erfi(sqrt(a + b*x + c*x**2))
```

Mathematica [A] time = 0.0258226, size = 20, normalized size = 0.95

$$\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/Sqrt[a + b*x + c*x^2],x]

[Out] Sqrt[Pi]*Erfi[Sqrt[a + x*(b + c*x)]]
```

Maple [A] time = 0.016, size = 18, normalized size = 0.9

$$\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)\sqrt{\pi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^(1/2),x)

[Out] erfi((c*x^2+b*x+a)^(1/2))*Pi^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{(cx^2+bx+a)}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/sqrt(c*x^2 + b*x + a),x, algorithm="maxi
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/sqrt(c*x^2 + b*x + a),
x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(2\,cx+b)e^{(cx^2+bx+a)}}{\sqrt{cx^2+bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/sqrt(c*x^2 + b*x + a),x, algorithm="fric
```

```
[Out] integral((2*c*x + b)*e^(c*x^2 + b*x + a)/sqrt(c*x^2 + b*x + a), x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\left(\int \frac{be^{bx}e^{cx^2}}{\sqrt{a+bx+cx^2}}\,dx+\int \frac{2cxe^{bx}e^{cx^2}}{\sqrt{a+bx+cx^2}}\,dx\right)e^a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] (Integral(b*exp(b*x)*exp(c*x**2)/sqrt(a + b*x + c*x**2), x) + Int
egral(2*c*x*exp(b*x)*exp(c*x**2)/sqrt(a + b*x + c*x**2), x))*exp(
a)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{(cx^2+bx+a)}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/sqrt(c*x^2 + b*x + a),x, algorithm="giac
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/sqrt(c*x^2 + b*x + a),
x)
```

3.615 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=51

$$2\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{2e^{a+bx+cx^2}}{\sqrt{a+bx+cx^2}}$$

```
[Out] (-2*E^(a + b*x + c*x^2))/Sqrt[a + b*x + c*x^2] + 2*Sqrt[Pi]*Erfi[
Sqrt[a + b*x + c*x^2]]
```

Rubi [A] time = 0.577123, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$2\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{2e^{a+bx+cx^2}}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*E^(a + b*x + c*x^2))/Sqrt[a + b*x + c*x^2] + 2*Sqrt[Pi]*Erfi[
Sqrt[a + b*x + c*x^2]]
```

Rubi in Sympy [A] time = 82.4697, size = 48, normalized size = 0.94

$$2\sqrt{\pi}\,\text{erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{2e^{a+bx+cx^2}}{\sqrt{a+bx+cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] 2*sqrt(pi)*erfi(sqrt(a + b*x + c*x**2)) - 2*exp(a + b*x + c*x**2)
/sqrt(a + b*x + c*x**2)
```

Mathematica [A] time = 0.0800613, size = 48, normalized size = 0.94

$$2\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)-\frac{2e^{a+x(b+cx)}}{\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*E^(a + x*(b + c*x)))/Sqrt[a + x*(b + c*x)] + 2*Sqrt[Pi]*Erfi[
Sqrt[a + x*(b + c*x)]]
```

Maple [A] time = 0.009, size = 45, normalized size = 0.9

$$2\,\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)\sqrt{\pi}-2\,\frac{e^{cx^2+bx+a}}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*erfi((c*x^2+b*x+a)^(1/2))*Pi^(1/2)-2*exp(c*x^2+b*x+a)/(c*x^2+b*
x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{(cx^2+bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(3/2),x, algorithm="ma
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(3/2)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{(cx^2+bx+a)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(3/2),x, algorithm="fr
```

```
[Out] integral((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(3/2),
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{(cx^2+bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(3/2),x, algorithm="gi
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(3/2)
, x)
```

3.616 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{(a+bx+cx^2)^{5/2}}\,dx$

Optimal. Leaf size=85

$$\frac{4}{3}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{4e^{a+bx+cx^2}}{3\sqrt{a+bx+cx^2}}-\frac{2e^{a+bx+cx^2}}{3\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] (-2*E^(a + b*x + c*x^2))/(3*(a + b*x + c*x^2)^(3/2)) - (4*E^(a +
b*x + c*x^2))/(3*Sqrt[a + b*x + c*x^2]) + (4*Sqrt[Pi]*Erfi[Sqrt[a
 + b*x + c*x^2]])/3
```

Rubi [A] time = 0.775344, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$

$$\frac{4}{3}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{4e^{a+bx+cx^2}}{3\sqrt{a+bx+cx^2}}-\frac{2e^{a+bx+cx^2}}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*E^(a + b*x + c*x^2))/(3*(a + b*x + c*x^2)^(3/2)) - (4*E^(a +
b*x + c*x^2))/(3*Sqrt[a + b*x + c*x^2]) + (4*Sqrt[Pi]*Erfi[Sqrt[a
 + b*x + c*x^2]])/3
```

Rubi in Sympy [A] time = 88.9101, size = 80, normalized size = 0.94

$$\frac{4\sqrt{\pi}\,\text{erfi}\left(\sqrt{a+bx+cx^2}\right)}{3}-\frac{4e^{a+bx+cx^2}}{3\sqrt{a+bx+cx^2}}-\frac{2e^{a+bx+cx^2}}{3\left(a+bx+cx^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] 4*sqrt(pi)*erfi(sqrt(a + b*x + c*x**2))/3 - 4*exp(a + b*x + c*x**
2)/(3*sqrt(a + b*x + c*x**2)) - 2*exp(a + b*x + c*x**2)/(3*(a + b
*x + c*x**2)**(3/2))
```

Mathematica [A] time = 0.157838, size = 67, normalized size = 0.79

$$\frac{4}{3}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)-\frac{2e^{a+x(b+cx)}\left(2a+2bx+2cx^2+1\right)}{3(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*E^(a + x*(b + c*x))*(1 + 2*a + 2*b*x + 2*c*x^2))/(3*(a + x*(b
 + c*x))^(3/2)) + (4*Sqrt[Pi]*Erfi[Sqrt[a + x*(b + c*x)]])/3
```

Maple [A] time = 0.01, size = 70, normalized size = 0.8

$$-\frac{2\,\mathrm{e}^{cx^2+bx+a}}{3}\left(cx^2+bx+a\right)^{-\frac{3}{2}}+\frac{4\sqrt{\pi}}{3}\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)-\frac{4\,\mathrm{e}^{cx^2+bx+a}}{3}\frac{1}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3*exp(c*x^2+b*x+a)/(c*x^2+b*x+a)^(3/2)+4/3*erfi((c*x^2+b*x+a)^
(1/2))*Pi^(1/2)-4/3*exp(c*x^2+b*x+a)/(c*x^2+b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{(cx^2+bx+a)}}{(cx^2+bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(5/2),x, algorithm="ma
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(5/2)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(2\,cx+b)e^{(cx^2+bx+a)}}{(c^2x^4+2\,bcx^3+2\,abx+(b^2+2\,ac)x^2+a^2)\sqrt{cx^2+bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(5/2),x, algorithm="fr
```

```
[Out] integral((2*c*x + b)*e^(c*x^2 + b*x + a)/((c^2*x^4 + 2*b*c*x^3 +
2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)*sqrt(c*x^2 + b*x + a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{(cx^2+bx+a)}}{(cx^2+bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(5/2),x, algorithm="gi
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(5/2)
, x)
```

3.617 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{(a+bx+cx^2)^{7/2}} \, dx$

Optimal. Leaf size=115

$$\frac{8}{15}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{8e^{a+bx+cx^2}}{15\sqrt{a+bx+cx^2}}-\frac{4e^{a+bx+cx^2}}{15\,(a+bx+cx^2)^{3/2}}-\frac{2e^{a+bx+cx^2}}{5\,(a+bx+cx^2)^{5/2}}$$

```
[Out] (-2*E^(a + b*x + c*x^2))/(5*(a + b*x + c*x^2)^(5/2)) - (4*E^(a +
b*x + c*x^2))/(15*(a + b*x + c*x^2)^(3/2)) - (8*E^(a + b*x + c*x^
2))/(15*Sqrt[a + b*x + c*x^2]) + (8*Sqrt[Pi]*Erfi[Sqrt[a + b*x +
c*x^2]])/15
```

Rubi [A] time = 0.877851, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$\frac{8}{15}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{8e^{a+bx+cx^2}}{15\sqrt{a+bx+cx^2}}-\frac{4e^{a+bx+cx^2}}{15\,(a+bx+cx^2)^{3/2}}-\frac{2e^{a+bx+cx^2}}{5\,(a+bx+cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*E^(a + b*x + c*x^2))/(5*(a + b*x + c*x^2)^(5/2)) - (4*E^(a +
b*x + c*x^2))/(15*(a + b*x + c*x^2)^(3/2)) - (8*E^(a + b*x + c*x^
2))/(15*Sqrt[a + b*x + c*x^2]) + (8*Sqrt[Pi]*Erfi[Sqrt[a + b*x +
c*x^2]])/15
```

Rubi in Sympy [A] time = 99.3292, size = 109, normalized size = 0.95

$$\frac{8\sqrt{\pi}\,\text{erfi}\left(\sqrt{a+bx+cx^2}\right)}{15}-\frac{8e^{a+bx+cx^2}}{15\sqrt{a+bx+cx^2}}-\frac{4e^{a+bx+cx^2}}{15\,(a+bx+cx^2)^{\frac{3}{2}}}-\frac{2e^{a+bx+cx^2}}{5\,(a+bx+cx^2)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] 8*sqrt(pi)*erfi(sqrt(a + b*x + c*x**2))/15 - 8*exp(a + b*x + c*x*
*2)/(15*sqrt(a + b*x + c*x**2)) - 4*exp(a + b*x + c*x**2)/(15*(a
+ b*x + c*x**2)**(3/2)) - 2*exp(a + b*x + c*x**2)/(5*(a + b*x + c
*x**2)**(5/2))
```

Mathematica [A] time = 0.251465, size = 106, normalized size = 0.92

$$\frac{2}{15}\left(4\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)-\frac{e^{a+x(b+cx)}\left(4a^2+a\left(8bx+8cx^2+2\right)+4b^2x^2+2b\left(4cx^3+x\right)+4c^2x^4+2cx^2+3\right)}{(a+x(b+cx))^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(-((E^(a + x*(b + c*x))*(3 + 4*a^2 + 4*b^2*x^2 + 2*c*x^2 + 4*c
^2*x^4 + a*(2 + 8*b*x + 8*c*x^2) + 2*b*(x + 4*c*x^3)))/(a + x*(b
+ c*x))^(5/2)) + 4*Sqrt[Pi]*Erfi[Sqrt[a + x*(b + c*x)]]))/15
```

Maple [A] time = 0.01, size = 95, normalized size = 0.8

$$-\frac{2\,\mathrm{e}^{cx^2+bx+a}}{5}\left(cx^2+bx+a\right)^{-\frac{5}{2}}-\frac{4\,\mathrm{e}^{cx^2+bx+a}}{15}\left(cx^2+bx+a\right)^{-\frac{3}{2}}+\frac{8\sqrt{\pi}}{15}\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)-\frac{8\,\mathrm{e}^{cx^2+bx+a}}{15}\frac{1}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] -2/5*exp(c*x^2+b*x+a)/(c*x^2+b*x+a)^(5/2)-4/15*exp(c*x^2+b*x+a)/(
c*x^2+b*x+a)^(3/2)+8/15*erfi((c*x^2+b*x+a)^(1/2))*Pi^(1/2)-8/15*e
xp(c*x^2+b*x+a)/(c*x^2+b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(cx^2+bx+a\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(7/2),x, algorithm="ma
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(7/2)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(c^3x^6+3\,bc^2x^5+3\,(b^2c+ac^2)x^4+3\,a^2bx+(b^3+6\,abc)x^3+a^3+3\,(ab^2+a^2c)x^2\right)\sqrt{cx^2+bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(7/2),x, algorithm="fr
```

```
[Out] integral((2*c*x + b)*e^(c*x^2 + b*x + a)/((c^3*x^6 + 3*b*c^2*x^5
+ 3*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a*b*c)*x^3 + a^3 +
 3*(a*b^2 + a^2*c)*x^2)*sqrt(c*x^2 + b*x + a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{(cx^2+bx+a)}}{(cx^2+bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(7/2),x, algorithm="gi
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(7/2)
, x)
```

3.618 $\int \frac{e^{a+bx+cx^2}(b+2cx)}{(a+bx+cx^2)^{9/2}}\,dx$

Optimal. Leaf size=145

$$\frac{16}{105}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{16e^{a+bx+cx^2}}{105\sqrt{a+bx+cx^2}}-\frac{8e^{a+bx+cx^2}}{105\left(a+bx+cx^2\right)^{3/2}}-\frac{4e^{a+bx+cx^2}}{35\left(a+bx+cx^2\right)^{5/2}}-\frac{2e^{a+bx+cx^2}}{7\left(a+bx+cx^2\right)^{7/2}}$$

```
[Out] (-2*E^(a + b*x + c*x^2))/(7*(a + b*x + c*x^2)^(7/2)) - (4*E^(a +
b*x + c*x^2))/(35*(a + b*x + c*x^2)^(5/2)) - (8*E^(a + b*x + c*x^
2))/(105*(a + b*x + c*x^2)^(3/2)) - (16*E^(a + b*x + c*x^2))/(105
*Sqrt[a + b*x + c*x^2]) + (16*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]
])/105
```

Rubi [A] time = 0.934263, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121

$$\frac{16}{105}\sqrt{\pi}\text{Erfi}\left(\sqrt{a+bx+cx^2}\right)-\frac{16e^{a+bx+cx^2}}{105\sqrt{a+bx+cx^2}}-\frac{8e^{a+bx+cx^2}}{105\left(a+bx+cx^2\right)^{3/2}}-\frac{4e^{a+bx+cx^2}}{35\left(a+bx+cx^2\right)^{5/2}}-\frac{2e^{a+bx+cx^2}}{7\left(a+bx+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*E^(a + b*x + c*x^2))/(7*(a + b*x + c*x^2)^(7/2)) - (4*E^(a +
b*x + c*x^2))/(35*(a + b*x + c*x^2)^(5/2)) - (8*E^(a + b*x + c*x^
2))/(105*(a + b*x + c*x^2)^(3/2)) - (16*E^(a + b*x + c*x^2))/(105
*Sqrt[a + b*x + c*x^2]) + (16*Sqrt[Pi]*Erfi[Sqrt[a + b*x + c*x^2]
])/105
```

Rubi in Sympy [A] time = 116.711, size = 138, normalized size = 0.95

$$\frac{16\sqrt{\pi}\operatorname{erfi}\left(\sqrt{a+bx+cx^2}\right)}{105}-\frac{16e^{a+bx+cx^2}}{105\sqrt{a+bx+cx^2}}-\frac{8e^{a+bx+cx^2}}{105\left(a+bx+cx^2\right)^{\frac{3}{2}}}-\frac{4e^{a+bx+cx^2}}{35\left(a+bx+cx^2\right)^{\frac{5}{2}}}-\frac{2e^{a+bx+cx^2}}{7\left(a+bx+cx^2\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(9/2),x)
```

```
[Out] 16*sqrt(pi)*erfi(sqrt(a + b*x + c*x**2))/105 - 16*exp(a + b*x + c
*x**2)/(105*sqrt(a + b*x + c*x**2)) - 8*exp(a + b*x + c*x**2)/(10
5*(a + b*x + c*x**2)**(3/2)) - 4*exp(a + b*x + c*x**2)/(35*(a + b
*x + c*x**2)**(5/2)) - 2*exp(a + b*x + c*x**2)/(7*(a + b*x + c*x*
*2)**(7/2))
```

Mathematica [A] time = 0.342092, size = 90, normalized size = 0.62

$$\frac{2}{105}\left(8\sqrt{\pi}\text{Erfi}\left(\sqrt{a+x(b+cx)}\right)+\frac{e^{a+x(b+cx)}\left(-8(a+x(b+cx))^3-4(a+x(b+cx))^2-6(a+x(b+cx))-15\right)}{(a+x(b+cx))^{7/2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(a + b*x + c*x^2)*(b + 2*c*x))/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (2*((E^(a + x*(b + c*x))*(-15 - 6*(a + x*(b + c*x)) - 4*(a + x*(b
 + c*x))^2 - 8*(a + x*(b + c*x))^3))/(a + x*(b + c*x))^(7/2) + 8*
Sqrt[Pi]*Erfi[Sqrt[a + x*(b + c*x)]]))/105
```

Maple [A] time = 0.01, size = 120, normalized size = 0.8

$$-\frac{2\,\mathrm{e}^{cx^2+bx+a}}{7}\left(cx^2+bx+a\right)^{-\frac{7}{2}}-\frac{4\,\mathrm{e}^{cx^2+bx+a}}{35}\left(cx^2+bx+a\right)^{-\frac{5}{2}}-\frac{8\,\mathrm{e}^{cx^2+bx+a}}{105}\left(cx^2+bx+a\right)^{-\frac{3}{2}}+\frac{16\sqrt{\pi}}{105}\mathit{erfi}\left(\sqrt{cx^2+bx+a}\right)-\frac{16\,\mathrm{e}^{cx^2+bx+a}}{105}\frac{1}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(c*x^2+b*x+a)*(2*c*x+b)/(c*x^2+b*x+a)^(9/2),x)
```

```
[Out] -2/7*exp(c*x^2+b*x+a)/(c*x^2+b*x+a)^(7/2)-4/35*exp(c*x^2+b*x+a)/(
c*x^2+b*x+a)^(5/2)-8/105*exp(c*x^2+b*x+a)/(c*x^2+b*x+a)^(3/2)+16/
105*erfi((c*x^2+b*x+a)^(1/2))*Pi^(1/2)-16/105*exp(c*x^2+b*x+a)/(c
*x^2+b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(cx^2+bx+a\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(9/2),x, algorithm="ma
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(9/2)
, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{\left(c^4x^8+4\,bc^3x^7+2\,(3\,b^2c^2+2\,ac^3)x^6+4\,(b^3c+3\,abc^2)x^5+4\,a^3bx+(b^4+12\,ab^2c+6\,a^2c^2)x^4+a^4+4\,(ab^3+3\,a^2b\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(9/2),x, algorithm="fr
```

```
[Out] integral((2*c*x + b)*e^(c*x^2 + b*x + a)/((c^4*x^8 + 4*b*c^3*x^7
+ 2*(3*b^2*c^2 + 2*a*c^3)*x^6 + 4*(b^3*c + 3*a*b*c^2)*x^5 + 4*a^3
*b*x + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*x^4 + a^4 + 4*(a*b^3 + 3*a^
2*b*c)*x^3 + 2*(3*a^2*b^2 + 2*a^3*c)*x^2)*sqrt(c*x^2 + b*x + a)),
 x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(c*x**2+b*x+a)*(2*c*x+b)/(c*x**2+b*x+a)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,cx+b)e^{\left(cx^2+bx+a\right)}}{(cx^2+bx+a)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(9/2),x, algorithm="gi
```

```
[Out] integrate((2*c*x + b)*e^(c*x^2 + b*x + a)/(c*x^2 + b*x + a)^(9/2)
, x)
```

3.619 $\int \frac{e^{-x}}{\sqrt{1-e^{-2x}}}\, dx$

Optimal. Leaf size=8

$$-\sin^{-1}\left(e^{-x}\right)$$

```
[Out] -ArcSin[E^(-x)]
```

Rubi [A] time = 0.0436441, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\sin^{-1}\left(e^{-x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[1/(E^x*Sqrt[1 - E^(-2*x)]),x]

[Out] -ArcSin[E^(-x)]
```

Rubi in Sympy [A] time = 6.42739, size = 7, normalized size = 0.88

$$-\operatorname{asin}\left(e^{-x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/exp(x)/(1-1/exp(2*x))**(1/2),x)

[Out] -asin(exp(-x))
```

Mathematica [B] time = 0.0294932, size = 42, normalized size = 5.25

$$\frac{e^{-x}\sqrt{e^{2x}-1}\tan^{-1}\left(\sqrt{e^{2x}-1}\right)}{\sqrt{1-e^{-2x}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(E^x*Sqrt[1 - E^(-2*x)]),x]

[Out] (Sqrt[-1 + E^(2*x)]*ArcTan[Sqrt[-1 + E^(2*x)]])/(E^x*Sqrt[1 - E^(
-2*x)])
```

Maple [B] time = 0.053, size = 37, normalized size = 4.6

$$-\frac{1}{e^x}\sqrt{(e^x)^2-1}\arctan\left(\frac{1}{\sqrt{(e^x)^2-1}}\right)\frac{1}{\sqrt{\frac{(e^x)^2-1}{(e^x)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/exp(x)/(1-1/exp(2*x))^(1/2),x)
```

```
[Out] -1/((exp(x)^2-1)/exp(x)^2)^(1/2)/exp(x)*(exp(x)^2-1)^(1/2)*arctan
(1/(exp(x)^2-1)^(1/2))
```

Maxima [A] time = 0.91323, size = 19, normalized size = 2.38

$$\arctan\left(\sqrt{-e^{(-2\,x)} + 1}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/sqrt(-e^(-2*x) + 1),x, algorithm="maxima")
```

```
[Out] arctan(sqrt(-e^(-2*x) + 1)*e^x)
```

Fricas [A] time = 0.243801, size = 24, normalized size = 3.

$$2 \arctan\left(\left(\sqrt{-e^{(-2\,x)} + 1} - 1\right)e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/sqrt(-e^(-2*x) + 1),x, algorithm="fricas")
```

```
[Out] 2*arctan((sqrt(-e^(-2*x) + 1) - 1)*e^x)
```

Sympy [A] time = 0.65511, size = 7, normalized size = 0.88

$$-\operatorname{asin}\left(e^{-x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/exp(x)/(1-1/exp(2*x))**(1/2),x)
```

```
[Out] -asin(exp(-x))
```

GIAC/XCAS [A] time = 0.245901, size = 19, normalized size = 2.38

$$-\arctan\left(i\right) + \arctan\left(\sqrt{e^{(2\,x)} - 1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/sqrt(-e^(-2*x) + 1),x, algorithm="giac")
```

```
[Out] -arctan(i) + arctan(sqrt(e^(2*x) - 1))
```

3.620 $\int \frac{e^x}{4+e^{2x}} \, dx$

Optimal. Leaf size=12

$$\frac{1}{2}\tan^{-1}\left(\frac{e^x}{2}\right)$$

```
[Out] ArcTan[E^x/2]/2
```

Rubi [A] time = 0.0308902, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{2}\tan^{-1}\left(\frac{e^x}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^x/(4 + E^(2*x)),x]

[Out] ArcTan[E^x/2]/2
```

Rubi in Sympy [A] time = 5.64931, size = 7, normalized size = 0.58

$$\frac{\operatorname{atan}\left(\frac{e^x}{2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)/(4+exp(2*x)),x)

[Out] atan(exp(x)/2)/2
```

Mathematica [A] time = 0.00615455, size = 12, normalized size = 1.

$$-\frac{1}{2}\tan^{-1}\left(2e^{-x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x/(4 + E^(2*x)),x]

[Out] -ArcTan[2/E^x]/2
```

Maple [A] time = 0.004, size = 8, normalized size = 0.7

$$\frac{1}{2}\arctan\left(\frac{e^x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)/(4+exp(2*x)),x)
```

```
[Out] 1/2*arctan(1/2*exp(x))
```

Maxima [A] time = 0.855386, size = 9, normalized size = 0.75

$$\frac{1}{2}\arctan\left(\frac{1}{2}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 4),x, algorithm="maxima")
```

```
[Out] 1/2*arctan(1/2*e^x)
```

Fricas [A] time = 0.255744, size = 9, normalized size = 0.75

$$\frac{1}{2}\arctan\left(\frac{1}{2}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 4),x, algorithm="fricas")
```

```
[Out] 1/2*arctan(1/2*e^x)
```

Sympy [A] time = 0.100897, size = 15, normalized size = 1.25

$$\operatorname{RootSum}\left(16z^{2}+1,\left(i\mapsto i\log\left(8i+e^{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(4+exp(2*x)),x)
```

```
[Out] RootSum(16*_z**2 + 1, Lambda(_i, _i*log(8*_i + exp(x))))
```

GIAC/XCAS [A] time = 0.227604, size = 9, normalized size = 0.75

$$\frac{1}{2}\arctan\left(\frac{1}{2}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 4),x, algorithm="giac")
```

```
[Out] 1/2*arctan(1/2*e^x)
```

3.621 $\int \frac{e^x}{1-e^{2x}} dx$

Optimal. Leaf size=4

$$\tanh^{-1}(e^x)$$

```
[Out] ArcTanh[E^x]
```

Rubi [A] time = 0.0318556, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\tanh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(1 - E^(2*x)),x]

[Out] ArcTanh[E^x]
```

Rubi in Sympy [A] time = 7.23292, size = 3, normalized size = 0.75

$$\operatorname{atanh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1-exp(2*x)),x)

[Out] atanh(exp(x))
```

Mathematica [B] time = 0.00565602, size = 23, normalized size = 5.75

$$\frac{1}{2}\log(e^x+1)-\frac{1}{2}\log(1-e^x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(1 - E^(2*x)),x]

[Out] -Log[1 - E^x]/2 + Log[1 + E^x]/2
```

Maple [A] time = 0.001, size = 4, normalized size = 1.

$$\mathit{Artanh}(\mathrm{e}^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1-exp(2*x)),x)

[Out] arctanh(exp(x))
```

Maxima [A] time = 0.745941, size = 20, normalized size = 5.

$$\frac{1}{2}\,\log\left(e^{x}+1\right)-\frac{1}{2}\,\log\left(e^{x}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 1),x, algorithm="maxima")

[Out] 1/2*log(e^x + 1) - 1/2*log(e^x - 1)
```

Fricas [A] time = 0.241032, size = 20, normalized size = 5.

$$\frac{1}{2}\,\log\left(e^{x}+1\right)-\frac{1}{2}\,\log\left(e^{x}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 1),x, algorithm="fricas")

[Out] 1/2*log(e^x + 1) - 1/2*log(e^x - 1)
```

Sympy [A] time = 0.090269, size = 15, normalized size = 3.75

$$-\frac{\log\left(e^{x}-1\right)}{2}+\frac{\log\left(e^{x}+1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1-exp(2*x)),x)

[Out] -log(exp(x) - 1)/2 + log(exp(x) + 1)/2
```

GIAC/XCAS [A] time = 0.222042, size = 22, normalized size = 5.5

$$\frac{1}{2}\ln\left(e^{x}+1\right)-\frac{1}{2}\ln\left(\left|e^{x}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 1),x, algorithm="giac")

[Out] 1/2*ln(e^x + 1) - 1/2*ln(abs(e^x - 1))
```

3.622 $\int \frac{e^x}{3-4e^{2x}}\,dx$

Optimal. Leaf size=20

$$\frac{\tanh^{-1}\left(\frac{2e^x}{\sqrt{3}}\right)}{2\sqrt{3}}$$

```
[Out] ArcTanh[(2*E^x)/Sqrt[3]]/(2*Sqrt[3])
```

Rubi [A] time = 0.0388341, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{\tanh^{-1}\left(\frac{2e^x}{\sqrt{3}}\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(3 - 4*E^(2*x)),x]

[Out] ArcTanh[(2*E^x)/Sqrt[3]]/(2*Sqrt[3])
```

Rubi in Sympy [A] time = 7.19289, size = 19, normalized size = 0.95

$$\frac{\sqrt{3}\,\operatorname{atanh}\left(\frac{2\sqrt{3}e^x}{3}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(3-4*exp(2*x)),x)

[Out] sqrt(3)*atanh(2*sqrt(3)*exp(x)/3)/6
```

Mathematica [A] time = 0.0229991, size = 36, normalized size = 1.8

$$\frac{\log\left(2e^x+\sqrt{3}\right)-\log\left(\sqrt{3}-2e^x\right)}{4\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(3 - 4*E^(2*x)),x]

[Out] (-Log[Sqrt[3] - 2*E^x] + Log[Sqrt[3] + 2*E^x])/(4*Sqrt[3])
```

Maple [A] time = 0.006, size = 14, normalized size = 0.7

$$\frac{\sqrt{3}}{6}\mathit{Artanh}\left(\frac{2\,\mathrm{e}^{x}\sqrt{3}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(3-4*exp(2*x)),x)
```

```
[Out] 1/6*arctanh(2/3*exp(x)*3^(1/2))*3^(1/2)
```

Maxima [A] time = 0.912627, size = 35, normalized size = 1.75

$$-\frac{1}{12}\sqrt{3}\log\left(-\frac{\sqrt{3}-2e^{x}}{\sqrt{3}+2e^{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(4*e^(2*x) - 3),x, algorithm="maxima")
```

```
[Out] -1/12*sqrt(3)*log(-(sqrt(3) - 2*e^x)/(sqrt(3) + 2*e^x))
```

Fricas [A] time = 0.244315, size = 49, normalized size = 2.45

$$\frac{1}{12}\sqrt{3}\log\left(\frac{4\sqrt{3}e^{(2x)}+3\sqrt{3}+12e^{x}}{4e^{(2x)}-3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(4*e^(2*x) - 3),x, algorithm="fricas")
```

```
[Out] 1/12*sqrt(3)*log((4*sqrt(3)*e^(2*x) + 3*sqrt(3) + 12*e^x)/(4*e^(2
*x) - 3))
```

Sympy [A] time = 0.110476, size = 15, normalized size = 0.75

$$\operatorname{RootSum}\left(48z^{2}-1,\left(i\mapsto i\log\left(6i+e^{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(3-4*exp(2*x)),x)
```

```
[Out] RootSum(48*_z**2 - 1, Lambda(_i, _i*log(6*_i + exp(x))))
```

GIAC/XCAS [A] time = 0.224921, size = 41, normalized size = 2.05

$$\frac{1}{12}\sqrt{3}\ln\left(\frac{1}{2}\sqrt{3}+e^{x}\right)-\frac{1}{12}\sqrt{3}\ln\left(\left|-\frac{1}{2}\sqrt{3}+e^{x}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(4*e^(2*x) - 3),x, algorithm="giac")
```

```
[Out] 1/12*sqrt(3)*ln(1/2*sqrt(3) + e^x) - 1/12*sqrt(3)*ln(abs(-1/2*sqr
t(3) + e^x))
```

3.623 $\int e^x \sqrt{3-4e^{2x}}\, dx$

Optimal. Leaf size=36

$$\frac{1}{2}e^x\sqrt{3-4e^{2x}}+\frac{3}{4}\sin^{-1}\left(\frac{2e^x}{\sqrt{3}}\right)$$

```
[Out] (E^x*Sqrt[3 - 4*E^(2*x)])/2 + (3*ArcSin[(2*E^x)/Sqrt[3]])/4
```

Rubi [A] time = 0.0494649, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{2}e^x\sqrt{3-4e^{2x}}+\frac{3}{4}\sin^{-1}\left(\frac{2e^x}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^x*Sqrt[3 - 4*E^(2*x)],x]

[Out] (E^x*Sqrt[3 - 4*E^(2*x)])/2 + (3*ArcSin[(2*E^x)/Sqrt[3]])/4
```

Rubi in Sympy [A] time = 6.12856, size = 32, normalized size = 0.89

$$\frac{\sqrt{-4e^{2x}+3}e^x}{2}+\frac{3\operatorname{asin}\left(\frac{2\sqrt{3}e^x}{3}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)*(3-4*exp(2*x))**(1/2),x)

[Out] sqrt(-4*exp(2*x) + 3)*exp(x)/2 + 3*asin(2*sqrt(3)*exp(x)/3)/4
```

Mathematica [A] time = 0.0270341, size = 36, normalized size = 1.

$$\frac{1}{2}e^x\sqrt{3-4e^{2x}}+\frac{3}{4}\sin^{-1}\left(\frac{2e^x}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x*Sqrt[3 - 4*E^(2*x)],x]

[Out] (E^x*Sqrt[3 - 4*E^(2*x)])/2 + (3*ArcSin[(2*E^x)/Sqrt[3]])/4
```

Maple [A] time = 0.01, size = 26, normalized size = 0.7

$$\frac{e^x}{2}\sqrt{3-4\,(e^x)^2}+\frac{3}{4}\arcsin\left(\frac{2\,e^x\sqrt{3}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)*(3-4*exp(2*x))^(1/2),x)
```

```
[Out] 1/2*exp(x)*(3-4*exp(x)^2)^(1/2)+3/4*arcsin(2/3*exp(x)*3^(1/2))
```

Maxima [A] time = 0.871692, size = 34, normalized size = 0.94

$$\frac{1}{2}\sqrt{-4\,e^{(2\,x)}+3}e^{x}+\frac{3}{4}\,\arcsin\left(\frac{2}{3}\,\sqrt{3}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-4*e^(2*x) + 3)*e^x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(-4*e^(2*x) + 3)*e^x + 3/4*arcsin(2/3*sqrt(3)*e^x)
```

Fricas [A] time = 0.272996, size = 46, normalized size = 1.28

$$\frac{1}{2}\sqrt{-4\,e^{(2\,x)}+3}e^{x}-\frac{3}{4}\,\arctan\left(\frac{1}{2}\,\sqrt{-4\,e^{(2\,x)}+3}e^{(-x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-4*e^(2*x) + 3)*e^x,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(-4*e^(2*x) + 3)*e^x - 3/4*arctan(1/2*sqrt(-4*e^(2*x) + 3
)*e^(-x))
```

Sympy [A] time = 1.74331, size = 42, normalized size = 1.17

$$\begin{cases} \frac{\sqrt{-4e^{2x}+3}e^{x}}{2}+\frac{3\,\mathrm{asin}\left(\frac{2\sqrt{3}e^{x}}{3}\right)}{4} & \text{for}\: e^{x}<\log\left(\frac{\sqrt{3}}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(3-4*exp(2*x))**(1/2),x)
```

```
[Out] Piecewise((sqrt(-4*exp(2*x) + 3)*exp(x)/2 + 3*asin(2*sqrt(3)*exp(
x)/3)/4, exp(x) < log(sqrt(3)/2)))
```

GIAC/XCAS [A] time = 0.238203, size = 34, normalized size = 0.94

$$\frac{1}{2}\sqrt{-4\,e^{(2\,x)}+3}e^{x}+\frac{3}{4}\,\arcsin\left(\frac{2}{3}\,\sqrt{3}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-4*e^(2*x) + 3)*e^x,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(-4*e^(2*x) + 3)*e^x + 3/4*arcsin(2/3*sqrt(3)*e^x)
```

3.624 $\int e^{x^2} x^3 \, dx$

Optimal. Leaf size=22

$$\frac{1}{2}e^{x^2}x^2 - \frac{e^{x^2}}{2}$$

```
[Out] -E^x^2/2 + (E^x^2*x^2)/2
```

Rubi [A] time = 0.0321641, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$

$$\frac{1}{2}e^{x^2}x^2 - \frac{e^{x^2}}{2}$$

Antiderivative was successfully verified.

```
[In] Int[E^x^2*x^3,x]

[Out] -E^x^2/2 + (E^x^2*x^2)/2
```

Rubi in Sympy [A] time = 3.78177, size = 15, normalized size = 0.68

$$\frac{x^2 e^{x^2}}{2} - \frac{e^{x^2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x**2)*x**3,x)

[Out] x**2*exp(x**2)/2 - exp(x**2)/2
```

Mathematica [A] time = 0.00335246, size = 14, normalized size = 0.64

$$\frac{1}{2}e^{x^2}\left(x^2-1\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x^2*x^3,x]

[Out] (E^x^2*(-1 + x^2))/2
```

Maple [A] time = 0.004, size = 12, normalized size = 0.6

$$\frac{\left(x^2-1\right)e^{x^2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x^2)*x^3,x)
```

```
[Out] 1/2*(x^2-1)*exp(x^2)
```

Maxima [A] time = 0.785365, size = 15, normalized size = 0.68

$$\frac{1}{2}\left(x^2-1\right)e^{\left(x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(x^2),x, algorithm="maxima")
```

```
[Out] 1/2*(x^2 - 1)*e^(x^2)
```

Fricas [A] time = 0.234235, size = 15, normalized size = 0.68

$$\frac{1}{2}\left(x^2-1\right)e^{\left(x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(x^2),x, algorithm="fricas")
```

```
[Out] 1/2*(x^2 - 1)*e^(x^2)
```

Sympy [A] time = 0.059248, size = 10, normalized size = 0.45

$$\frac{\left(x^2-1\right)e^{x^2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**2)*x**3,x)
```

```
[Out] (x**2 - 1)*exp(x**2)/2
```

GIAC/XCAS [A] time = 0.223341, size = 15, normalized size = 0.68

$$\frac{1}{2}\left(x^2-1\right)e^{\left(x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(x^2),x, algorithm="giac")
```

```
[Out] 1/2*(x^2 - 1)*e^(x^2)
```

3.625 $\int e^x \sqrt{1-e^{2x}}\,dx$

Optimal. Leaf size=29

$$\frac{1}{2}e^x\sqrt{1-e^{2x}}+\frac{1}{2}\sin^{-1}\left(e^x\right)$$

```
[Out] (E^x*Sqrt[1 - E^(2*x)])/2 + ArcSin[E^x]/2
```

Rubi [A] time = 0.0448223, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{2}e^x\sqrt{1-e^{2x}}+\frac{1}{2}\sin^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Sqrt[1 - E^(2*x)],x]

[Out] (E^x*Sqrt[1 - E^(2*x)])/2 + ArcSin[E^x]/2
```

Rubi in Sympy [A] time = 6.0512, size = 20, normalized size = 0.69

$$\frac{\sqrt{-e^{2x}+1}e^x}{2}+\frac{\operatorname{asin}\left(e^x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(1-exp(2*x))**(1/2),x)

[Out] sqrt(-exp(2*x) + 1)*exp(x)/2 + asin(exp(x))/2
```

Mathematica [A] time = 0.021292, size = 26, normalized size = 0.9

$$\frac{1}{2}\left(e^x\sqrt{1-e^{2x}}+\sin^{-1}\left(e^x\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Sqrt[1 - E^(2*x)],x]

[Out] (E^x*Sqrt[1 - E^(2*x)] + ArcSin[E^x])/2
```

Maple [A] time = 0.006, size = 21, normalized size = 0.7

$$\frac{e^x}{2}\sqrt{1-\left(e^x\right)^2}+\frac{\arcsin\left(e^x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(1-exp(2*x))^(1/2),x)
```

```
[Out] 1/2*exp(x)*(1-exp(x)^2)^(1/2)+1/2*arcsin(exp(x))
```

Maxima [A] time = 0.854537, size = 27, normalized size = 0.93

$$\frac{1}{2}\sqrt{-e^{(2x)}+1}e^{x}+\frac{1}{2}\arcsin\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 1)*e^x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(-e^(2*x) + 1)*e^x + 1/2*arcsin(e^x)
```

Fricas [A] time = 0.246567, size = 124, normalized size = 4.28

$$-\frac{2\left(2\sqrt{-e^{(2x)}+1}+e^{(2x)}-2\right)\arctan\left(\left(\sqrt{-e^{(2x)}+1}-1\right)e^{(-x)}\right)-\left(e^{(3x)}-2e^{x}\right)\sqrt{-e^{(2x)}+1}+2e^{(3x)}-2e^{x}}{2\left(2\sqrt{-e^{(2x)}+1}+e^{(2x)}-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 1)*e^x,x, algorithm="fricas")
```

```
[Out] -1/2*(2*(2*sqrt(-e^(2*x) + 1) + e^(2*x) - 2)*arctan((sqrt(-e^(2*x
) + 1) - 1)*e^(-x)) - (e^(3*x) - 2*e^x)*sqrt(-e^(2*x) + 1) + 2*e^
(3*x) - 2*e^x)/(2*sqrt(-e^(2*x) + 1) + e^(2*x) - 2)
```

Sympy [A] time = 1.54093, size = 24, normalized size = 0.83

$$\begin{cases}\frac{\sqrt{-e^{2x}+1}e^{x}}{2}+\frac{\operatorname{asin}\left(e^{x}\right)}{2} & \text{for}\: e^{x}<0\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(1-exp(2*x))**(1/2),x)
```

```
[Out] Piecewise((sqrt(-exp(2*x) + 1)*exp(x)/2 + asin(exp(x))/2, exp(x)
< 0))
```

GIAC/XCAS [A] time = 0.231957, size = 27, normalized size = 0.93

$$\frac{1}{2}\sqrt{-e^{(2x)}+1}e^{x}+\frac{1}{2}\arcsin\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 1)*e^x,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(-e^(2*x) + 1)*e^x + 1/2*arcsin(e^x)
```

3.626 $\int \frac{e^x}{\sqrt{1+e^x+e^{2x}}}\,dx$

Optimal. Leaf size=14

$$\sinh^{-1}\left(\frac{2e^x+1}{\sqrt{3}}\right)$$

```
[Out] ArcSinh[(1 + 2*E^x)/Sqrt[3]]
```

Rubi [A] time = 0.060464, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\sinh^{-1}\left(\frac{2e^x+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/Sqrt[1 + E^x + E^(2*x)],x]

[Out] ArcSinh[(1 + 2*E^x)/Sqrt[3]]
```

Rubi in Sympy [A] time = 12.0855, size = 22, normalized size = 1.57

$$\operatorname{atanh}\left(\frac{2e^x+1}{2\sqrt{e^{2x}+e^x+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1+exp(x)+exp(2*x))**(1/2),x)

[Out] atanh((2*exp(x) + 1)/(2*sqrt(exp(2*x) + exp(x) + 1)))
```

Mathematica [A] time = 0.0184937, size = 14, normalized size = 1.

$$\sinh^{-1}\left(\frac{2e^x+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/Sqrt[1 + E^x + E^(2*x)],x]

[Out] ArcSinh[(1 + 2*E^x)/Sqrt[3]]
```

Maple [A] time = 0.015, size = 11, normalized size = 0.8

$$\mathit{Arcsinh}\left(\frac{2\sqrt{3}}{3}\left(e^x+\frac{1}{2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1+exp(x)+exp(2*x))^(1/2),x)
```

```
[Out] arcsinh(2/3*3^(1/2)*(exp(x)+1/2))
```

Maxima [A] time = 0.870914, size = 16, normalized size = 1.14

$$\operatorname{arsinh}\left(\frac{1}{3}\sqrt{3}(2e^x+1)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) + e^x + 1),x, algorithm="maxima")
```

```
[Out] arcsinh(1/3*sqrt(3)*(2*e^x + 1))
```

Fricas [A] time = 0.255446, size = 28, normalized size = 2.

$$-\log\left(2\sqrt{e^{(2x)}+e^x+1}-2e^x-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) + e^x + 1),x, algorithm="fricas")
```

```
[Out] -log(2*sqrt(e^(2*x) + e^x + 1) - 2*e^x - 1)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{e^x}{\sqrt{e^{2x}+e^x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1+exp(x)+exp(2*x))**(1/2),x)
```

```
[Out] Integral(exp(x)/sqrt(exp(2*x) + exp(x) + 1), x)
```

GIAC/XCAS [A] time = 0.230663, size = 28, normalized size = 2.

$$-\ln\left(2\sqrt{e^{(2x)}+e^x+1}-2e^x-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) + e^x + 1),x, algorithm="giac")
```

```
[Out] -ln(2*sqrt(e^(2*x) + e^x + 1) - 2*e^x - 1)
```

3.627 $\int \frac{e^x}{-4+e^{2x}} \, dx$

Optimal. Leaf size=12

$$-\frac{1}{2} \tanh^{-1}\left(\frac{e^x}{2}\right)$$

```
[Out] -ArcTanh[E^x/2]/2
```

Rubi [A] time = 0.031038, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{1}{2} \tanh^{-1}\left(\frac{e^x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(-4 + E^(2*x)),x]

[Out] -ArcTanh[E^x/2]/2
```

Rubi in Sympy [A] time = 5.61878, size = 8, normalized size = 0.67

$$-\frac{\operatorname{atanh}\left(\frac{e^x}{2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(-4+exp(2*x)),x)

[Out] -atanh(exp(x)/2)/2
```

Mathematica [A] time = 0.00522724, size = 23, normalized size = 1.92

$$\frac{1}{4} \log\left(2-e^x\right)-\frac{1}{4} \log\left(e^x+2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(-4 + E^(2*x)),x]

[Out] Log[2 - E^x]/4 - Log[2 + E^x]/4
```

Maple [B] time = 0.009, size = 16, normalized size = 1.3

$$-\frac{\ln\left(2+e^x\right)}{4}+\frac{\ln\left(-2+e^x\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(-4+exp(2*x)),x)
```

```
[Out] -1/4*ln(2+exp(x))+1/4*ln(-2+exp(x))
```

Maxima [A] time = 0.777038, size = 20, normalized size = 1.67

$$-\frac{1}{4}\log\left(e^{x}+2\right)+\frac{1}{4}\log\left(e^{x}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 4),x, algorithm="maxima")
```

```
[Out] -1/4*log(e^x + 2) + 1/4*log(e^x - 2)
```

Fricas [A] time = 0.250054, size = 20, normalized size = 1.67

$$-\frac{1}{4}\log\left(e^{x}+2\right)+\frac{1}{4}\log\left(e^{x}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 4),x, algorithm="fricas")
```

```
[Out] -1/4*log(e^x + 2) + 1/4*log(e^x - 2)
```

Sympy [A] time = 0.090813, size = 15, normalized size = 1.25

$$\frac{\log\left(e^{x}-2\right)}{4}-\frac{\log\left(e^{x}+2\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(-4+exp(2*x)),x)
```

```
[Out] log(exp(x) - 2)/4 - log(exp(x) + 2)/4
```

GIAC/XCAS [A] time = 0.234528, size = 22, normalized size = 1.83

$$-\frac{1}{4}\ln\left(e^{x}+2\right)+\frac{1}{4}\ln\left(|e^{x}-2|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 4),x, algorithm="giac")
```

```
[Out] -1/4*ln(e^x + 2) + 1/4*ln(abs(e^x - 2))
```

3.628 $\int e^{2-x^2} x \, dx$

Optimal. Leaf size=13

$$-\frac{1}{2}e^{2-x^2}$$

```
[Out] -E^(2 - x^2)/2
```

Rubi [A] time = 0.0168765, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{2}e^{2-x^2}$$

Antiderivative was successfully verified.

```
[In] Int[E^(2 - x^2)*x,x]
```

```
[Out] -E^(2 - x^2)/2
```

Rubi in Sympy [A] time = 2.17448, size = 8, normalized size = 0.62

$$-\frac{e^{-x^2+2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(-x**2+2)*x,x)
```

```
[Out] -exp(-x**2 + 2)/2
```

Mathematica [A] time = 0.00310671, size = 13, normalized size = 1.

$$-\frac{1}{2}e^{2-x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(2 - x^2)*x,x]
```

```
[Out] -E^(2 - x^2)/2
```

Maple [A] time = 0.003, size = 11, normalized size = 0.9

$$-\frac{e^{-x^2+2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(-x^2+2)*x,x)
```

```
[Out] -1/2*exp(-x^2+2)
```

Maxima [A] time = 0.814733, size = 14, normalized size = 1.08

$$-\frac{1}{2}\,e^{\left(-x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(-x^2 + 2),x, algorithm="maxima")
```

```
[Out] -1/2*e^(-x^2 + 2)
```

Fricas [A] time = 0.243212, size = 14, normalized size = 1.08

$$-\frac{1}{2}\,e^{\left(-x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(-x^2 + 2),x, algorithm="fricas")
```

```
[Out] -1/2*e^(-x^2 + 2)
```

Sympy [A] time = 0.061345, size = 8, normalized size = 0.62

$$-\frac{e^{-x^2+2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(-x**2+2)*x,x)
```

```
[Out] -exp(-x**2 + 2)/2
```

GIAC/XCAS [A] time = 0.232861, size = 14, normalized size = 1.08

$$-\frac{1}{2}\,e^{\left(-x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(-x^2 + 2),x, algorithm="giac")
```

```
[Out] -1/2*e^(-x^2 + 2)
```

3.629 $\int (e^x - x^e)\, dx$

Optimal. Leaf size=16

$$e^x - \frac{x^{1+e}}{1+e}$$

```
[Out] E^x - x^(1 + E)/(1 + E)
```

Rubi [A] time = 0.0107137, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$e^x - \frac{x^{1+e}}{1+e}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x - x^E,x]

[Out] E^x - x^(1 + E)/(1 + E)
```

Rubi in Sympy [A] time = 1.21862, size = 10, normalized size = 0.62

$$-\frac{x^{1+e}}{1+e} + e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)-x**E,x)

[Out] -x**(1 + E)/(1 + E) + exp(x)
```

Mathematica [A] time = 0.00828916, size = 16, normalized size = 1.

$$e^x - \frac{x^{1+e}}{1+e}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x - x^E,x]

[Out] E^x - x^(1 + E)/(1 + E)
```

Maple [A] time = 0.003, size = 16, normalized size = 1.

$$e^x - \frac{x^{1+E}}{1+E}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)-x^E,x)
```

```
[Out] exp(x)-x^(1+E)/(1+E)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^E + e^x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.258488, size = 27, normalized size = 1.69

$$-\frac{xx^{E} - (E+1)e^{x}}{E+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^E + e^x,x, algorithm="fricas")
```

```
[Out] -(x*x^E - (E + 1)*e^x)/(E + 1)
```

Sympy [A] time = 0.058463, size = 10, normalized size = 0.62

$$-\frac{x^{1+e}}{1+e} + e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)-x**E,x)
```

```
[Out] -x**(1 + E)/(1 + E) + exp(x)
```

GIAC/XCAS [A] time = 0.220431, size = 20, normalized size = 1.25

$$-\frac{x^{E+1}}{E+1} + e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^E + e^x,x, algorithm="giac")
```

```
[Out] -x^(E + 1)/(E + 1) + e^x
```

3.630 $\int \frac{-1+e^{2x}}{3+e^{2x}} \, dx$

Optimal. Leaf size=18

$$\frac{2}{3}\log\left(e^{2x}+3\right)-\frac{x}{3}$$

```
[Out] -x/3 + (2*Log[3 + E^(2*x)])/3
```

Rubi [A] time = 0.0491084, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2}{3}\log\left(e^{2x}+3\right)-\frac{x}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[(-1 + E^(2*x))/(3 + E^(2*x)),x]
```

```
[Out] -x/3 + (2*Log[3 + E^(2*x)])/3
```

Rubi in Sympy [A] time = 10.503, size = 22, normalized size = 1.22

$$x+\frac{2\log\left(e^{2x}+3\right)}{3}-\frac{2\log\left(e^{2x}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-1+exp(2*x))/(3+exp(2*x)),x)
```

```
[Out] x + 2*log(exp(2*x) + 3)/3 - 2*log(exp(2*x))/3
```

Mathematica [A] time = 0.00514469, size = 18, normalized size = 1.

$$\frac{2}{3}\log\left(e^{2x}+3\right)-\frac{x}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-1 + E^(2*x))/(3 + E^(2*x)),x]
```

```
[Out] -x/3 + (2*Log[3 + E^(2*x)])/3
```

Maple [A] time = 0.008, size = 18, normalized size = 1.

$$\frac{2\ln\left(3+e^{2x}\right)}{3}-\frac{\ln\left(e^{2x}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-1+exp(2*x))/(3+exp(2*x)),x)
```

```
[Out] 2/3*ln(3+exp(2*x))-1/6*ln(exp(2*x))
```

Maxima [A] time = 0.803991, size = 18, normalized size = 1.

$$-\frac{1}{3}x + \frac{2}{3}\log\left(e^{(2x)} + 3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(2*x) - 1)/(e^(2*x) + 3),x, algorithm="maxima")
```

```
[Out] -1/3*x + 2/3*log(e^(2*x) + 3)
```

Fricas [A] time = 0.287011, size = 18, normalized size = 1.

$$-\frac{1}{3}x + \frac{2}{3}\log\left(e^{(2x)} + 3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(2*x) - 1)/(e^(2*x) + 3),x, algorithm="fricas")
```

```
[Out] -1/3*x + 2/3*log(e^(2*x) + 3)
```

Sympy [A] time = 0.062797, size = 14, normalized size = 0.78

$$-\frac{x}{3} + \frac{2\log\left(e^{2x} + 3\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-1+exp(2*x))/(3+exp(2*x)),x)
```

```
[Out] -x/3 + 2*log(exp(2*x) + 3)/3
```

GIAC/XCAS [A] time = 0.229917, size = 18, normalized size = 1.

$$-\frac{1}{3}x + \frac{2}{3}\ln\left(e^{(2x)} + 3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(2*x) - 1)/(e^(2*x) + 3),x, algorithm="giac")
```

```
[Out] -1/3*x + 2/3*ln(e^(2*x) + 3)
```

3.631 $\int \frac{e^x}{\sqrt{1-e^{2x}}}\,dx$

Optimal. Leaf size=4

$$\sin^{-1}(e^x)$$

```
[Out] ArcSin[E^x]
```

Rubi [A] time = 0.0362115, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\sin^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/Sqrt[1 - E^(2*x)],x]

[Out] ArcSin[E^x]
```

Rubi in Sympy [A] time = 5.80158, size = 3, normalized size = 0.75

$$\operatorname{asin}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1-exp(2*x))**(1/2),x)

[Out] asin(exp(x))
```

Mathematica [A] time = 0.0116867, size = 4, normalized size = 1.

$$\sin^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/Sqrt[1 - E^(2*x)],x]

[Out] ArcSin[E^x]
```

Maple [A] time = 0.01, size = 4, normalized size = 1.

$$\arcsin(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1-exp(2*x))^(1/2),x)

[Out] arcsin(exp(x))
```

Maxima [A] time = 0.886182, size = 4, normalized size = 1.

$$\arcsin(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(-e^(2*x) + 1),x, algorithm="maxima")
```

```
[Out] arcsin(e^x)
```

Fricas [A] time = 0.388679, size = 27, normalized size = 6.75

$$-2 \arctan\left(\left(\sqrt{-e^{(2x)}+1}-1\right)e^{(-x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(-e^(2*x) + 1),x, algorithm="fricas")
```

```
[Out] -2*arctan((sqrt(-e^(2*x) + 1) - 1)*e^(-x))
```

Sympy [A] time = 0.532435, size = 3, normalized size = 0.75

$$\operatorname{asin}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1-exp(2*x))**(1/2),x)
```

```
[Out] asin(exp(x))
```

GIAC/XCAS [A] time = 0.238143, size = 4, normalized size = 1.

$$\arcsin(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(-e^(2*x) + 1),x, algorithm="giac")
```

```
[Out] arcsin(e^x)
```

3.632 $\int \frac{e^{2x}}{1+e^{4x}} \, dx$

Optimal. Leaf size=10

$$\frac{1}{2}\tan^{-1}\left(e^{2x}\right)$$

```
[Out] ArcTan[E^(2*x)]/2
```

Rubi [A] time = 0.033772, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{1}{2}\tan^{-1}\left(e^{2x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[E^(2*x)/(1 + E^(4*x)),x]

[Out] ArcTan[E^(2*x)]/2
```

Rubi in Sympy [A] time = 5.8892, size = 7, normalized size = 0.7

$$\frac{\operatorname{atan}\left(e^{2x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(2*x)/(1+exp(4*x)),x)

[Out] atan(exp(2*x))/2
```

Mathematica [A] time = 0.00583009, size = 10, normalized size = 1.

$$\frac{1}{2}\tan^{-1}\left(e^{2x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(2*x)/(1 + E^(4*x)),x]

[Out] ArcTan[E^(2*x)]/2
```

Maple [A] time = 0.004, size = 8, normalized size = 0.8

$$\frac{\arctan\left(\left(e^{x}\right)^{2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(2*x)/(1+exp(4*x)),x)
```

```
[Out] 1/2*arctan(exp(x)^2)
```

Maxima [A] time = 0.857471, size = 9, normalized size = 0.9

$$\frac{1}{2} \arctan\left(e^{(2x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^(4*x) + 1),x, algorithm="maxima")
```

```
[Out] 1/2*arctan(e^(2*x))
```

Fricas [A] time = 0.261047, size = 9, normalized size = 0.9

$$\frac{1}{2} \arctan\left(e^{(2x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^(4*x) + 1),x, algorithm="fricas")
```

```
[Out] 1/2*arctan(e^(2*x))
```

Sympy [A] time = 0.099873, size = 17, normalized size = 1.7

$$\operatorname{RootSum}\left(16z^2 + 1, \left(i \mapsto i \log\left(4i + e^{2x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(1+exp(4*x)),x)
```

```
[Out] RootSum(16*_z**2 + 1, Lambda(_i, _i*log(4*_i + exp(2*x))))
```

GIAC/XCAS [A] time = 0.224156, size = 9, normalized size = 0.9

$$\frac{1}{2} \arctan\left(e^{(2x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^(4*x) + 1),x, algorithm="giac")
```

```
[Out] 1/2*arctan(e^(2*x))
```

3.633 $\int \frac{1}{-3e^x+e^{2x}}\,dx$

Optimal. Leaf size=27

$$-\frac{x}{9}+\frac{e^{-x}}{3}+\frac{1}{9}\log\left(3-e^x\right)$$

```
[Out] 1/(3*E^x) - x/9 + Log[3 - E^x]/9
```

Rubi [A] time = 0.0359578, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{x}{9}+\frac{e^{-x}}{3}+\frac{1}{9}\log\left(3-e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(-3*E^x + E^(2*x))^(-1),x]

[Out] 1/(3*E^x) - x/9 + Log[3 - E^x]/9
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\log\left(1-3e^{-x}\right)}{9}-\int^{e^{-x}}\left(-\frac{1}{3}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-3*exp(x)+exp(2*x)),x)

[Out] log(1 - 3*exp(-x))/9 - Integral(-1/3, (x, exp(-x)))
```

Mathematica [A] time = 0.0137961, size = 22, normalized size = 0.81

$$\frac{1}{9}\left(3e^{-x}+\log\left(1-3e^{-x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-3*E^x + E^(2*x))^(-1),x]

[Out] (3/E^x + Log[1 - 3/E^x])/9
```

Maple [A] time = 0.013, size = 20, normalized size = 0.7

$$\frac{1}{3\,e^x}-\frac{\ln\left(e^x\right)}{9}+\frac{\ln\left(e^x-3\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-3*exp(x)+exp(2*x)),x)
```

```
[Out] 1/3/exp(x)-1/9*ln(exp(x))+1/9*ln(exp(x)-3)
```

Maxima [A] time = 0.778071, size = 23, normalized size = 0.85

$$-\frac{1}{9}x+\frac{1}{3}e^{(-x)}+\frac{1}{9}\log\left(e^{x}-3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) - 3*e^x),x, algorithm="maxima")
```

```
[Out] -1/9*x + 1/3*e^(-x) + 1/9*log(e^x - 3)
```

Fricas [A] time = 0.247423, size = 28, normalized size = 1.04

$$-\frac{1}{9}\left(xe^{x}-e^{x}\log\left(e^{x}-3\right)-3\right)e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) - 3*e^x),x, algorithm="fricas")
```

```
[Out] -1/9*(x*e^x - e^x*log(e^x - 3) - 3)*e^(-x)
```

Sympy [A] time = 0.08867, size = 17, normalized size = 0.63

$$-\frac{x}{9}+\frac{\log\left(e^{x}-3\right)}{9}+\frac{e^{-x}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-3*exp(x)+exp(2*x)),x)
```

```
[Out] -x/9 + log(exp(x) - 3)/9 + exp(-x)/3
```

GIAC/XCAS [A] time = 0.235499, size = 24, normalized size = 0.89

$$-\frac{1}{9}x+\frac{1}{3}e^{(-x)}+\frac{1}{9}\ln\left(|e^{x}-3|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(2*x) - 3*e^x),x, algorithm="giac")
```

```
[Out] -1/9*x + 1/3*e^(-x) + 1/9*ln(abs(e^x - 3))
```

3.634 $\int \frac{e^x(-2+e^x)}{1+e^x}\,dx$

Optimal. Leaf size=12

$$e^x-3\log\left(e^x+1\right)$$

```
[Out] E^x - 3*Log[1 + E^x]
```

Rubi [A] time = 0.0578177, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$e^x-3\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x*(-2 + E^x))/(1 + E^x),x]
```

```
[Out] E^x - 3*Log[1 + E^x]
```

Rubi in Sympy [A] time = 20.9066, size = 20, normalized size = 1.67

$$-3x+e^x-3\log\left(e^x+1\right)+3\log\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(-2+exp(x))/(1+exp(x)),x)
```

```
[Out] -3*x + exp(x) - 3*log(exp(x) + 1) + 3*log(exp(x))
```

Mathematica [A] time = 0.00665981, size = 12, normalized size = 1.

$$e^x-3\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x*(-2 + E^x))/(1 + E^x),x]
```

```
[Out] E^x - 3*Log[1 + E^x]
```

Maple [A] time = 0.004, size = 11, normalized size = 0.9

$$e^x-3\ln\left(1+e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(-2+exp(x))/(1+exp(x)),x)
```

```
[Out] exp(x)-3*ln(1+exp(x))
```

Maxima [A] time = 0.82933, size = 14, normalized size = 1.17

$$e^{x} - 3 \log\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x - 2)*e^x/(e^x + 1),x, algorithm="maxima")

[Out] e^x - 3*log(e^x + 1)
```

Fricas [A] time = 0.259894, size = 14, normalized size = 1.17

$$e^{x} - 3 \log\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x - 2)*e^x/(e^x + 1),x, algorithm="fricas")

[Out] e^x - 3*log(e^x + 1)
```

Sympy [A] time = 0.073321, size = 10, normalized size = 0.83

$$e^{x} - 3 \log\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(-2+exp(x))/(1+exp(x)),x)

[Out] exp(x) - 3*log(exp(x) + 1)
```

GIAC/XCAS [A] time = 0.230626, size = 14, normalized size = 1.17

$$e^{x} - 3 \ln\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x - 2)*e^x/(e^x + 1),x, algorithm="giac")

[Out] e^x - 3*ln(e^x + 1)
```

3.635 $\int \frac{e^x}{-1+e^{2x}} \, dx$

Optimal. Leaf size=6

$$-\tanh^{-1}\left(e^x\right)$$

```
[Out] -ArcTanh[E^x]
```

Rubi [A] time = 0.0300093, antiderivative size = 6, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\tanh^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(-1 + E^(2*x)),x]

[Out] -ArcTanh[E^x]
```

Rubi in Sympy [A] time = 5.56989, size = 5, normalized size = 0.83

$$-\operatorname{atanh}\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(-1+exp(2*x)),x)

[Out] -atanh(exp(x))
```

Mathematica [B] time = 0.00434473, size = 23, normalized size = 3.83

$$\frac{1}{2}\log\left(1-e^x\right)-\frac{1}{2}\log\left(e^x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(-1 + E^(2*x)),x]

[Out] Log[1 - E^x]/2 - Log[1 + E^x]/2
```

Maple [A] time = 0.005, size = 6, normalized size = 1.

$$-Artanh\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(-1+exp(2*x)),x)

[Out] -arctanh(exp(x))
```

Maxima [A] time = 0.776701, size = 20, normalized size = 3.33

$$-\frac{1}{2}\log\left(e^{x}+1\right)+\frac{1}{2}\log\left(e^{x}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 1),x, algorithm="maxima")

[Out] -1/2*log(e^x + 1) + 1/2*log(e^x - 1)
```

Fricas [A] time = 0.24859, size = 20, normalized size = 3.33

$$-\frac{1}{2}\log\left(e^{x}+1\right)+\frac{1}{2}\log\left(e^{x}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 1),x, algorithm="fricas")

[Out] -1/2*log(e^x + 1) + 1/2*log(e^x - 1)
```

Sympy [A] time = 0.087639, size = 15, normalized size = 2.5

$$\frac{\log\left(e^{x}-1\right)}{2}-\frac{\log\left(e^{x}+1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(-1+exp(2*x)),x)

[Out] log(exp(x) - 1)/2 - log(exp(x) + 1)/2
```

GIAC/XCAS [A] time = 0.44623, size = 22, normalized size = 3.67

$$-\frac{1}{2}\ln\left(e^{x}+1\right)+\frac{1}{2}\ln\left(|e^{x}-1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 1),x, algorithm="giac")

[Out] -1/2*ln(e^x + 1) + 1/2*ln(abs(e^x - 1))
```

3.636 $\int \frac{e^x}{1+e^{2x}}\,dx$

Optimal. Leaf size=4

$$\tan^{-1}(e^x)$$

```
[Out] ArcTan[E^x]
```

Rubi [A] time = 0.0285767, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\tan^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(1 + E^(2*x)),x]

[Out] ArcTan[E^x]
```

Rubi in Sympy [A] time = 5.5341, size = 3, normalized size = 0.75

$$\operatorname{atan}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1+exp(2*x)),x)

[Out] atan(exp(x))
```

Mathematica [A] time = 0.00514277, size = 4, normalized size = 1.

$$\tan^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(1 + E^(2*x)),x]

[Out] ArcTan[E^x]
```

Maple [A] time = 0., size = 4, normalized size = 1.

$$\arctan(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1+exp(2*x)),x)

[Out] arctan(exp(x))
```

Maxima [A] time = 0.841785, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 1),x, algorithm="maxima")
```

```
[Out] arctan(e^x)
```

Fricas [A] time = 0.241873, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 1),x, algorithm="fricas")
```

```
[Out] arctan(e^x)
```

Sympy [A] time = 0.097382, size = 15, normalized size = 3.75

$$\operatorname{RootSum}\left(4z^{2}+1,\left(i\mapsto i\log\left(2i+e^{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1+exp(2*x)),x)
```

```
[Out] RootSum(4*_z**2 + 1, Lambda(_i, _i*log(2*_i + exp(x))))
```

GIAC/XCAS [A] time = 0.245671, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 1),x, algorithm="giac")
```

```
[Out] arctan(e^x)
```

3.637 $\int \frac{e^{-x}+e^x}{-e^{-x}+e^x}\,dx$

Optimal. Leaf size=12

$$\log\left(e^{-x}-e^x\right)$$

```
[Out] Log[E^(-x) - E^x]
```

Rubi [A] time = 0.0824308, antiderivative size = 14, normalized size of antiderivative = 1.17, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$\log\left(1-e^{2x}\right)-x$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(-x) + E^x)/(-E^(-x) + E^x),x]
```

```
[Out] -x + Log[1 - E^(2*x)]
```

Rubi in Sympy [A] time = 44.3662, size = 15, normalized size = 1.25

$$\log\left(-e^{2x}+1\right)-\frac{\log\left(e^{2x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(-x)+exp(x))/(-1/exp(x)+exp(x)),x)
```

```
[Out] log(-exp(2*x) + 1) - log(exp(2*x))/2
```

Mathematica [A] time = 0.00504645, size = 14, normalized size = 1.17

$$\log\left(1-e^{2x}\right)-x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(-x) + E^x)/(-E^(-x) + E^x),x]
```

```
[Out] -x + Log[1 - E^(2*x)]
```

Maple [A] time = 0.014, size = 17, normalized size = 1.4

$$\ln\left(1+e^x\right)+\ln\left(-1+e^x\right)-\ln\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(-x)+exp(x))/(-1/exp(x)+exp(x)),x)
```

```
[Out] ln(1+exp(x))+ln(-1+exp(x))-ln(exp(x))
```

Maxima [A] time = 0.780558, size = 14, normalized size = 1.17

$$\log\left(e^{(-x)} - e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) + e^x)/(e^(-x) - e^x),x, algorithm="maxima")
```

```
[Out] log(e^(-x) - e^x)
```

Fricas [A] time = 0.23904, size = 15, normalized size = 1.25

$$-x + \log\left(e^{(2\,x)} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) + e^x)/(e^(-x) - e^x),x, algorithm="fricas")
```

```
[Out] -x + log(e^(2*x) - 1)
```

Sympy [A] time = 0.078101, size = 8, normalized size = 0.67

$$-x + \log\left(e^{2x} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((exp(-x)+exp(x))/(-1/exp(x)+exp(x)),x)
```

```
[Out] -x + log(exp(2*x) - 1)
```

GIAC/XCAS [A] time = 0.237516, size = 16, normalized size = 1.33

$$-x + \ln\left(\left|e^{(2\,x)} - 1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) + e^x)/(e^(-x) - e^x),x, algorithm="giac")
```

```
[Out] -x + ln(abs(e^(2*x) - 1))
```

3.638 $\int \frac{-e^{-x}+e^x}{e^{-x}+e^x} dx$

Optimal. Leaf size=10

$$\log \left(e^{-x}+e^x\right)$$

```
[Out] Log[E^(-x) + E^x]
```

Rubi [A] time = 0.073143, antiderivative size = 12, normalized size of antiderivative = 1.2, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$\log \left(e^{2x}+1\right)-x$$

Antiderivative was successfully verified.

```
[In] Int[(-E^(-x) + E^x)/(E^(-x) + E^x),x]

[Out] -x + Log[1 + E^(2*x)]
```

Rubi in Sympy [A] time = 42.0219, size = 15, normalized size = 1.5

$$\log \left(e^{2x}+1\right)-\frac{\log \left(e^{2x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((-1/exp(x)+exp(x))/(exp(-x)+exp(x)),x)

[Out] log(exp(2*x) + 1) - log(exp(2*x))/2
```

Mathematica [A] time = 0.00456616, size = 12, normalized size = 1.2

$$\log \left(e^{2x}+1\right)-x$$

Antiderivative was successfully verified.

```
[In] Integrate[(-E^(-x) + E^x)/(E^(-x) + E^x),x]

[Out] -x + Log[1 + E^(2*x)]
```

Maple [A] time = 0.011, size = 14, normalized size = 1.4

$$\ln \left(1+\left(e^x\right)^2\right)-\ln \left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-1/exp(x)+exp(x))/(exp(-x)+exp(x)),x)

[Out] ln(1+exp(x)^2)-ln(exp(x))
```

Maxima [A] time = 0.7584, size = 11, normalized size = 1.1

$$\log\left(e^{(-x)} + e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) - e^x)/(e^(-x) + e^x),x, algorithm="maxima")
```

```
[Out] log(e^(-x) + e^x)
```

Fricas [A] time = 0.449851, size = 15, normalized size = 1.5

$$-x + \log\left(e^{(2\,x)} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) - e^x)/(e^(-x) + e^x),x, algorithm="fricas")
```

```
[Out] -x + log(e^(2*x) + 1)
```

Sympy [A] time = 0.075641, size = 8, normalized size = 0.8

$$-x + \log\left(e^{2x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-1/exp(x)+exp(x))/(exp(-x)+exp(x)),x)
```

```
[Out] -x + log(exp(2*x) + 1)
```

GIAC/XCAS [A] time = 0.228538, size = 15, normalized size = 1.5

$$-x + \ln\left(e^{(2\,x)} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) - e^x)/(e^(-x) + e^x),x, algorithm="giac")
```

```
[Out] -x + ln(e^(2*x) + 1)
```

3.639 $\int \frac{e^{-2x}+e^{2x}}{-e^{-2x}+e^{2x}}\,dx$

Optimal. Leaf size=18

$$\frac{1}{2}\log\left(1-e^{4x}\right)-x$$

```
[Out] -x + Log[1 - E^(4*x)]/2
```

Rubi [A] time = 0.0862825, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{2}\log\left(1-e^{4x}\right)-x$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(-2*x) + E^(2*x))/(-E^(-2*x) + E^(2*x)),x]

[Out] -x + Log[1 - E^(4*x)]/2
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(-2*x)+exp(2*x))/(-1/exp(2*x)+exp(2*x)),x)

[Out] Timed out
```

Mathematica [A] time = 0.00542851, size = 18, normalized size = 1.

$$\frac{1}{2}\log\left(1-e^{4x}\right)-x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(-2*x) + E^(2*x))/(-E^(-2*x) + E^(2*x)),x]

[Out] -x + Log[1 - E^(4*x)]/2
```

Maple [A] time = 0.019, size = 30, normalized size = 1.7

$$\frac{\ln(1+e^x)}{2}+\frac{\ln\left(1+(e^x)^2\right)}{2}+\frac{\ln(-1+e^x)}{2}-\ln(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(-2*x)+exp(2*x))/(-1/exp(2*x)+exp(2*x)),x)

[Out] 1/2*ln(1+exp(x))+1/2*ln(1+exp(x)^2)+1/2*ln(-1+exp(x))-ln(exp(x))
```

Maxima [A] time = 0.772364, size = 19, normalized size = 1.06

$$\frac{1}{2}\,\log\left(e^{(2\,x)} - e^{(-2\,x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e^(2*x) + e^(-2*x))/(e^(2*x) - e^(-2*x)),x, algorithm="maxima")
```

```
[Out] 1/2*log(e^(2*x) - e^(-2*x))
```

Fricas [A] time = 0.275267, size = 18, normalized size = 1.

$$-x + \frac{1}{2}\,\log\left(e^{(4\,x)} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e^(2*x) + e^(-2*x))/(e^(2*x) - e^(-2*x)),x, algorithm="fricas")
```

```
[Out] -x + 1/2*log(e^(4*x) - 1)
```

Sympy [A] time = 0.082834, size = 10, normalized size = 0.56

$$-x + \frac{\log\left(e^{4x} - 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((exp(-2*x)+exp(2*x))/(-1/exp(2*x)+exp(2*x)),x)
```

```
[Out] -x + log(exp(4*x) - 1)/2
```

GIAC/XCAS [A] time = 0.234633, size = 19, normalized size = 1.06

$$-x + \frac{1}{2}\,\ln\left(\left|e^{(4\,x)} - 1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e^(2*x) + e^(-2*x))/(e^(2*x) - e^(-2*x)),x, algorithm="giac")
```

```
[Out] -x + 1/2*ln(abs(e^(4*x) - 1))
```

3.640 $\int \frac{e^x}{\sqrt{1+e^{2x}}} dx$

Optimal. Leaf size=4

$$\sinh^{-1}(e^x)$$

```
[Out] ArcSinh[E^x]
```

Rubi [A] time = 0.0319986, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\sinh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In] Int[E^x/Sqrt[1 + E^(2*x)],x]

[Out] ArcSinh[E^x]
```

Rubi in Sympy [A] time = 5.193, size = 3, normalized size = 0.75

$$\operatorname{asinh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)/(1+exp(2*x))**(1/2),x)

[Out] asinh(exp(x))
```

Mathematica [A] time = 0.0117559, size = 4, normalized size = 1.

$$\sinh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x/Sqrt[1 + E^(2*x)],x]

[Out] ArcSinh[E^x]
```

Maple [A] time = 0.013, size = 4, normalized size = 1.

$$\mathit{Arcsinh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)/(1+exp(2*x))^(1/2),x)

[Out] arcsinh(exp(x))
```

Maxima [A] time = 0.862088, size = 4, normalized size = 1.

$$\operatorname{arsinh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) + 1),x, algorithm="maxima")
```

```
[Out] arcsinh(e^x)
```

Fricas [A] time = 0.251439, size = 22, normalized size = 5.5

$$-\log\left(\sqrt{e^{(2x)} + 1} - e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) + 1),x, algorithm="fricas")
```

```
[Out] -log(sqrt(e^(2*x) + 1) - e^x)
```

Sympy [A] time = 0.508696, size = 3, normalized size = 0.75

$$\operatorname{asinh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1+exp(2*x))**(1/2),x)
```

```
[Out] asinh(exp(x))
```

GIAC/XCAS [A] time = 0.22804, size = 22, normalized size = 5.5

$$-\ln\left(\sqrt{e^{(2x)} + 1} - e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) + 1),x, algorithm="giac")
```

```
[Out] -ln(sqrt(e^(2*x) + 1) - e^x)
```

3.641 $\int \frac{e^{\sqrt{4+x}}}{\sqrt{4+x}}\,dx$

Optimal. Leaf size=11

$$2e^{\sqrt{x+4}}$$

```
[Out] 2*E^Sqrt[4 + x]
```

Rubi [A] time = 0.0379298, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$2e^{\sqrt{x+4}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^Sqrt[4 + x]/Sqrt[4 + x],x]

[Out] 2*E^Sqrt[4 + x]
```

Rubi in Sympy [A] time = 3.53512, size = 8, normalized size = 0.73

$$2e^{\sqrt{x+4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((4+x)**(1/2))/(4+x)**(1/2),x)

[Out] 2*exp(sqrt(x + 4))
```

Mathematica [A] time = 0.00541891, size = 11, normalized size = 1.

$$2e^{\sqrt{x+4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^Sqrt[4 + x]/Sqrt[4 + x],x]

[Out] 2*E^Sqrt[4 + x]
```

Maple [A] time = 0.004, size = 9, normalized size = 0.8

$$2\,e^{\sqrt{4+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((4+x)^(1/2))/(4+x)^(1/2),x)

[Out] 2*exp((4+x)^(1/2))
```

Maxima [A] time = 0.820909, size = 11, normalized size = 1.

$$2\,e^{\left(\sqrt{x+4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(sqrt(x + 4))/sqrt(x + 4),x, algorithm="maxima")
```

```
[Out] 2*e^(sqrt(x + 4))
```

Fricas [A] time = 0.240854, size = 11, normalized size = 1.

$$2\,e^{\left(\sqrt{x+4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(sqrt(x + 4))/sqrt(x + 4),x, algorithm="fricas")
```

```
[Out] 2*e^(sqrt(x + 4))
```

Sympy [A] time = 0.224169, size = 8, normalized size = 0.73

$$2e^{\sqrt{x+4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((4+x)**(1/2))/(4+x)**(1/2),x)
```

```
[Out] 2*exp(sqrt(x + 4))
```

GIAC/XCAS [A] time = 0.219131, size = 11, normalized size = 1.

$$2\,e^{\left(\sqrt{x+4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(sqrt(x + 4))/sqrt(x + 4),x, algorithm="giac")
```

```
[Out] 2*e^(sqrt(x + 4))
```

3.642 $\int \frac{x}{\sqrt{-1+e^{2x^2}}} dx$

Optimal. Leaf size=18

$$\frac{1}{2}\tan^{-1}\left(\sqrt{e^{2x^2}-1}\right)$$

```
[Out] ArcTan[Sqrt[-1 + E^(2*x^2)]]/2
```

Rubi [A] time = 0.0947207, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{1}{2}\tan^{-1}\left(\sqrt{e^{2x^2}-1}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x/Sqrt[-1 + E^(2*x^2)],x]
```

```
[Out] ArcTan[Sqrt[-1 + E^(2*x^2)]]/2
```

Rubi in Sympy [A] time = 6.8302, size = 14, normalized size = 0.78

$$\frac{\operatorname{atan}\left(\sqrt{e^{2x^2}-1}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(-1+exp(2*x**2))**(1/2),x)
```

```
[Out] atan(sqrt(exp(2*x**2) - 1))/2
```

Mathematica [A] time = 0.01407, size = 18, normalized size = 1.

$$\frac{1}{2}\tan^{-1}\left(\sqrt{e^{2x^2}-1}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/Sqrt[-1 + E^(2*x^2)],x]
```

```
[Out] ArcTan[Sqrt[-1 + E^(2*x^2)]]/2
```

Maple [A] time = 0.016, size = 14, normalized size = 0.8

$$\frac{1}{2}\arctan\left(\sqrt{-1+e^{2x^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(-1+exp(2*x^2))^(1/2),x)
```

```
[Out] 1/2*arctan((-1+exp(2*x^2))^(1/2))
```

Maxima [A] time = 0.881927, size = 18, normalized size = 1.

$$\frac{1}{2}\arctan\left(\sqrt{e^{(2x^2)}-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/sqrt(e^(2*x^2) - 1),x, algorithm="maxima")
```

```
[Out] 1/2*arctan(sqrt(e^(2*x^2) - 1))
```

Fricas [A] time = 0.249721, size = 18, normalized size = 1.

$$\frac{1}{2}\arctan\left(\sqrt{e^{(2x^2)}-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/sqrt(e^(2*x^2) - 1),x, algorithm="fricas")
```

```
[Out] 1/2*arctan(sqrt(e^(2*x^2) - 1))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{\left(e^{x^2}-1\right)\left(e^{x^2}+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(-1+exp(2*x**2))**(1/2),x)
```

```
[Out] Integral(x/sqrt((exp(x**2) - 1)*(exp(x**2) + 1)), x)
```

GIAC/XCAS [A] time = 0.323234, size = 18, normalized size = 1.

$$\frac{1}{2}\arctan\left(\sqrt{e^{(2x^2)}-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/sqrt(e^(2*x^2) - 1),x, algorithm="giac")
```

```
[Out] 1/2*arctan(sqrt(e^(2*x^2) - 1))
```

3.643 $\int e^x \sqrt{9+e^{2x}}\,dx$

Optimal. Leaf size=31

$$\frac{1}{2}e^x\sqrt{e^{2x}+9}+\frac{9}{2}\sinh^{-1}\left(\frac{e^x}{3}\right)$$

```
[Out] (E^x*Sqrt[9 + E^(2*x)])/2 + (9*ArcSinh[E^x/3])/2
```

Rubi [A] time = 0.0384741, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{1}{2}e^x\sqrt{e^{2x}+9}+\frac{9}{2}\sinh^{-1}\left(\frac{e^x}{3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Sqrt[9 + E^(2*x)],x]

[Out] (E^x*Sqrt[9 + E^(2*x)])/2 + (9*ArcSinh[E^x/3])/2
```

Rubi in Sympy [A] time = 5.41781, size = 24, normalized size = 0.77

$$\frac{\sqrt{e^{2x}+9}e^x}{2}+\frac{9\operatorname{asinh}\left(\frac{e^x}{3}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(9+exp(2*x))**(1/2),x)

[Out] sqrt(exp(2*x) + 9)*exp(x)/2 + 9*asinh(exp(x)/3)/2
```

Mathematica [A] time = 0.0187318, size = 31, normalized size = 1.

$$\frac{1}{2}e^x\sqrt{e^{2x}+9}+\frac{9}{2}\sinh^{-1}\left(\frac{e^x}{3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Sqrt[9 + E^(2*x)],x]

[Out] (E^x*Sqrt[9 + E^(2*x)])/2 + (9*ArcSinh[E^x/3])/2
```

Maple [A] time = 0.009, size = 21, normalized size = 0.7

$$\frac{e^x}{2}\sqrt{9+(e^x)^2}+\frac{9}{2}Arcsinh\left(\frac{e^x}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(9+exp(2*x))^(1/2),x)
```

```
[Out] 1/2*exp(x)*(9+exp(x)^2)^(1/2)+9/2*arcsinh(1/3*exp(x))
```

Maxima [A] time = 0.834955, size = 27, normalized size = 0.87

$$\frac{1}{2}\sqrt{e^{(2x)}+9}e^{x}+\frac{9}{2}\,\operatorname{arsinh}\left(\frac{1}{3}\,e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(e^(2*x) + 9)*e^x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(e^(2*x) + 9)*e^x + 9/2*arcsinh(1/3*e^x)
```

Fricas [A] time = 0.238123, size = 126, normalized size = 4.06

$$-\frac{9\left(2\sqrt{e^{(2x)}+9}e^{x}-2\,e^{(2x)}-9\right)\log\left(\sqrt{e^{(2x)}+9}-e^{x}\right)+\left(2\,e^{(3x)}+9\,e^{x}\right)\sqrt{e^{(2x)}+9}-2\,e^{(4x)}-18\,e^{(2x)}}{2\left(2\sqrt{e^{(2x)}+9}e^{x}-2\,e^{(2x)}-9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(e^(2*x) + 9)*e^x,x, algorithm="fricas")
```

```
[Out] -1/2*(9*(2*sqrt(e^(2*x) + 9)*e^x - 2*e^(2*x) - 9)*log(sqrt(e^(2*x
) + 9) - e^x) + (2*e^(3*x) + 9*e^x)*sqrt(e^(2*x) + 9) - 2*e^(4*x)
 - 18*e^(2*x))/(2*sqrt(e^(2*x) + 9)*e^x - 2*e^(2*x) - 9)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{e^{2x}+9}e^{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(9+exp(2*x))**(1/2),x)
```

```
[Out] Integral(sqrt(exp(2*x) + 9)*exp(x), x)
```

GIAC/XCAS [A] time = 0.238761, size = 39, normalized size = 1.26

$$\frac{1}{2}\sqrt{e^{(2x)}+9}e^{x}-\frac{9}{2}\ln\left(\sqrt{e^{(2x)}+9}-e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(e^(2*x) + 9)*e^x,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(e^(2*x) + 9)*e^x - 9/2*ln(sqrt(e^(2*x) + 9) - e^x)
```

3.644 $\int e^x \sqrt{1+e^{2x}}\,dx$

Optimal. Leaf size=27

$$\frac{1}{2}e^x\sqrt{e^{2x}+1}+\frac{1}{2}\sinh^{-1}\left(e^x\right)$$

```
[Out] (E^x*Sqrt[1 + E^(2*x)])/2 + ArcSinh[E^x]/2
```

Rubi [A] time = 0.037997, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{1}{2}e^x\sqrt{e^{2x}+1}+\frac{1}{2}\sinh^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Sqrt[1 + E^(2*x)],x]

[Out] (E^x*Sqrt[1 + E^(2*x)])/2 + ArcSinh[E^x]/2
```

Rubi in Sympy [A] time = 5.42649, size = 20, normalized size = 0.74

$$\frac{\sqrt{e^{2x}+1}e^x}{2}+\frac{\operatorname{asinh}\left(e^x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(1+exp(2*x))**(1/2),x)

[Out] sqrt(exp(2*x) + 1)*exp(x)/2 + asinh(exp(x))/2
```

Mathematica [A] time = 0.0154689, size = 24, normalized size = 0.89

$$\frac{1}{2}\left(e^x\sqrt{e^{2x}+1}+\sinh^{-1}\left(e^x\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Sqrt[1 + E^(2*x)],x]

[Out] (E^x*Sqrt[1 + E^(2*x)] + ArcSinh[E^x])/2
```

Maple [A] time = 0.004, size = 19, normalized size = 0.7

$$\frac{e^x}{2}\sqrt{1+\left(e^x\right)^2}+\frac{\mathit{Arcsinh}\left(e^x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(1+exp(2*x))^(1/2),x)
```

```
[Out] 1/2*exp(x)*(1+exp(x)^2)^(1/2)+1/2*arcsinh(exp(x))
```

Maxima [A] time = 0.846697, size = 24, normalized size = 0.89

$$\frac{1}{2}\sqrt{e^{(2x)}+1}e^{x}+\frac{1}{2}\,\mathrm{arsinh}\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(e^(2*x) + 1)*e^x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(e^(2*x) + 1)*e^x + 1/2*arcsinh(e^x)
```

Fricas [A] time = 0.254123, size = 122, normalized size = 4.52

$$-\frac{\left(2\sqrt{e^{(2x)}+1}e^{x}-2\,e^{(2x)}-1\right)\log\left(\sqrt{e^{(2x)}+1}-e^{x}\right)+\left(2\,e^{(3x)}+e^{x}\right)\sqrt{e^{(2x)}+1}-2\,e^{(4x)}-2\,e^{(2x)}}{2\left(2\sqrt{e^{(2x)}+1}e^{x}-2\,e^{(2x)}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(e^(2*x) + 1)*e^x,x, algorithm="fricas")
```

```
[Out] -1/2*((2*sqrt(e^(2*x) + 1)*e^x - 2*e^(2*x) - 1)*log(sqrt(e^(2*x)
+ 1) - e^x) + (2*e^(3*x) + e^x)*sqrt(e^(2*x) + 1) - 2*e^(4*x) - 2
*e^(2*x))/(2*sqrt(e^(2*x) + 1)*e^x - 2*e^(2*x) - 1)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{e^{2x}+1}e^{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(1+exp(2*x))**(1/2),x)
```

```
[Out] Integral(sqrt(exp(2*x) + 1)*exp(x), x)
```

GIAC/XCAS [A] time = 0.233985, size = 39, normalized size = 1.44

$$\frac{1}{2}\sqrt{e^{(2x)}+1}e^{x}-\frac{1}{2}\ln\left(\sqrt{e^{(2x)}+1}-e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(e^(2*x) + 1)*e^x,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(e^(2*x) + 1)*e^x - 1/2*ln(sqrt(e^(2*x) + 1) - e^x)
```

3.645 $\int \frac{e^{x^2} x}{1+e^{2x^2}} \, dx$

Optimal. Leaf size=10

$$\frac{1}{2} \tan^{-1}\left(e^{x^2}\right)$$

```
[Out] ArcTan[E^x^2]/2
```

Rubi [A] time = 0.186775, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{1}{2} \tan^{-1}\left(e^{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x^2*x)/(1 + E^(2*x^2)),x]

[Out] ArcTan[E^x^2]/2
```

Rubi in Sympy [A] time = 16.8305, size = 7, normalized size = 0.7

$$\frac{\operatorname{atan}\left(e^{x^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**2)*x/(1+exp(2*x**2)),x)

[Out] atan(exp(x**2))/2
```

Mathematica [A] time = 0.007606, size = 10, normalized size = 1.

$$\frac{1}{2} \tan^{-1}\left(e^{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x^2*x)/(1 + E^(2*x^2)),x]

[Out] ArcTan[E^x^2]/2
```

Maple [A] time = 0.005, size = 8, normalized size = 0.8

$$\frac{\arctan\left(\mathrm{e}^{x^2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^2)*x/(1+exp(2*x^2)),x)
```

```
[Out] 1/2*arctan(exp(x^2))
```

Maxima [A] time = 0.882423, size = 9, normalized size = 0.9

$$\frac{1}{2}\arctan\left(e^{(x^2)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(x^2)/(e^(2*x^2) + 1),x, algorithm="maxima")
```

```
[Out] 1/2*arctan(e^(x^2))
```

Fricas [A] time = 0.240691, size = 9, normalized size = 0.9

$$\frac{1}{2}\arctan\left(e^{(x^2)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(x^2)/(e^(2*x^2) + 1),x, algorithm="fricas")
```

```
[Out] 1/2*arctan(e^(x^2))
```

Sympy [A] time = 0.120597, size = 17, normalized size = 1.7

$$\operatorname{RootSum}\left(16z^2+1,\left(i\mapsto i\log\left(4i+e^{x^2}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**2)*x/(1+exp(2*x**2)),x)
```

```
[Out] RootSum(16*_z**2 + 1, Lambda(_i, _i*log(4*_i + exp(x**2))))
```

GIAC/XCAS [A] time = 0.222921, size = 9, normalized size = 0.9

$$\frac{1}{2}\arctan\left(e^{(x^2)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^(x^2)/(e^(2*x^2) + 1),x, algorithm="giac")
```

```
[Out] 1/2*arctan(e^(x^2))
```

3.646 $\int e^{x^{3/2}} x^2 \, dx$

Optimal. Leaf size=28

$$\frac{2}{3}e^{x^{3/2}}x^{3/2} - \frac{2e^{x^{3/2}}}{3}$$

```
[Out] (-2*E^x^(3/2))/3 + (2*E^x^(3/2)*x^(3/2))/3
```

Rubi [A] time = 0.0630159, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\frac{2}{3}e^{x^{3/2}}x^{3/2} - \frac{2e^{x^{3/2}}}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x^(3/2)*x^2,x]
```

```
[Out] (-2*E^x^(3/2))/3 + (2*E^x^(3/2)*x^(3/2))/3
```

Rubi in Sympy [A] time = 6.50796, size = 24, normalized size = 0.86

$$\frac{2x^{\frac{3}{2}}e^{x^{\frac{3}{2}}}}{3} - \frac{2e^{x^{\frac{3}{2}}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**(3/2))*x**2,x)
```

```
[Out] 2*x**(3/2)*exp(x**(3/2))/3 - 2*exp(x**(3/2))/3
```

Mathematica [A] time = 0.0049831, size = 18, normalized size = 0.64

$$\frac{2}{3}e^{x^{3/2}}\left(x^{3/2}-1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^(3/2)*x^2,x]
```

```
[Out] (2*E^x^(3/2)*(-1 + x^(3/2)))/3
```

Maple [A] time = 0.001, size = 17, normalized size = 0.6

$$-\frac{2}{3}e^{x^{\frac{3}{2}}} + \frac{2}{3}e^{x^{\frac{3}{2}}}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^(3/2))*x^2,x)
```

```
[Out] -2/3*exp(x^(3/2))+2/3*exp(x^(3/2))*x^(3/2)
```

Maxima [A] time = 0.775684, size = 15, normalized size = 0.54

$$\frac{2}{3}\left(x^{\frac{3}{2}}-1\right)e^{\left(x^{\frac{3}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(x^(3/2)),x, algorithm="maxima")
```

```
[Out] 2/3*(x^(3/2) - 1)*e^(x^(3/2))
```

Fricas [A] time = 0.245369, size = 15, normalized size = 0.54

$$\frac{2}{3}\left(x^{\frac{3}{2}}-1\right)e^{\left(x^{\frac{3}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(x^(3/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(x^(3/2) - 1)*e^(x^(3/2))
```

Sympy [A] time = 4.78464, size = 24, normalized size = 0.86

$$\frac{2x^{\frac{3}{2}}e^{x^{\frac{3}{2}}}}{3}-\frac{2e^{x^{\frac{3}{2}}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**(3/2))*x**2,x)
```

```
[Out] 2*x**(3/2)*exp(x**(3/2))/3 - 2*exp(x**(3/2))/3
```

GIAC/XCAS [A] time = 0.238286, size = 18, normalized size = 0.64

$$\frac{2}{3}\left(x^{\frac{3}{2}}-1\right)e^{\left(x^{\frac{3}{2}}\right)}+\frac{2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(x^(3/2)),x, algorithm="giac")
```

```
[Out] 2/3*(x^(3/2) - 1)*e^(x^(3/2)) + 2/3
```

3.647 $\int \frac{e^x}{\sqrt{-3+e^{2x}}} \, dx$

Optimal. Leaf size=16

$$\tanh^{-1}\left(\frac{e^x}{\sqrt{e^{2x}-3}}\right)$$

```
[Out] ArcTanh[E^x/Sqrt[-3 + E^(2*x)]]
```

Rubi [A] time = 0.0385788, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\tanh^{-1}\left(\frac{e^x}{\sqrt{e^{2x}-3}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/Sqrt[-3 + E^(2*x)],x]

[Out] ArcTanh[E^x/Sqrt[-3 + E^(2*x)]]
```

Rubi in Sympy [A] time = 5.49344, size = 14, normalized size = 0.88

$$\operatorname{atanh}\left(\frac{e^x}{\sqrt{e^{2x}-3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(-3+exp(2*x))**(1/2),x)

[Out] atanh(exp(x)/sqrt(exp(2*x) - 3))
```

Mathematica [A] time = 0.0126313, size = 16, normalized size = 1.

$$\log\left(\sqrt{e^{2x}-3}+e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/Sqrt[-3 + E^(2*x)],x]

[Out] Log[E^x + Sqrt[-3 + E^(2*x)]]
```

Maple [A] time = 0.013, size = 13, normalized size = 0.8

$$\ln\left(e^x+\sqrt{-3+(e^x)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(-3+exp(2*x))^(1/2),x)
```

```
[Out] ln(exp(x)+(-3+exp(x)^2)^(1/2))
```

Maxima [A] time = 0.807099, size = 22, normalized size = 1.38

$$\log\left(2\sqrt{e^{(2x)} - 3} + 2e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) - 3),x, algorithm="maxima")
```

```
[Out] log(2*sqrt(e^(2*x) - 3) + 2*e^x)
```

Fricas [A] time = 0.234694, size = 22, normalized size = 1.38

$$-\log\left(\sqrt{e^{(2x)} - 3} - e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) - 3),x, algorithm="fricas")
```

```
[Out] -log(sqrt(e^(2*x) - 3) - e^x)
```

Sympy [A] time = 0.513242, size = 10, normalized size = 0.62

$$\operatorname{acosh}\left(\frac{\sqrt{3}e^{x}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(-3+exp(2*x))**(1/2),x)
```

```
[Out] acosh(sqrt(3)*exp(x)/3)
```

GIAC/XCAS [A] time = 0.227905, size = 22, normalized size = 1.38

$$-\ln\left(-\sqrt{e^{(2x)} - 3} + e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(e^(2*x) - 3),x, algorithm="giac")
```

```
[Out] -ln(-sqrt(e^(2*x) - 3) + e^x)
```

3.648 $\int \frac{e^x}{16-e^{2x}} dx$

Optimal. Leaf size=12

$$\frac{1}{4}\tanh^{-1}\left(\frac{e^x}{4}\right)$$

```
[Out] ArcTanh[E^x/4]/4
```

Rubi [A] time = 0.0336353, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{1}{4}\tanh^{-1}\left(\frac{e^x}{4}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(16 - E^(2*x)),x]

[Out] ArcTanh[E^x/4]/4
```

Rubi in Sympy [A] time = 7.29467, size = 7, normalized size = 0.58

$$\frac{\operatorname{atanh}\left(\frac{e^x}{4}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(16-exp(2*x)),x)

[Out] atanh(exp(x)/4)/4
```

Mathematica [A] time = 0.00605024, size = 23, normalized size = 1.92

$$\frac{1}{8}\log\left(e^x+4\right)-\frac{1}{8}\log\left(4-e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(16 - E^(2*x)),x]

[Out] -Log[4 - E^x]/8 + Log[4 + E^x]/8
```

Maple [B] time = 0.01, size = 16, normalized size = 1.3

$$-\frac{\ln\left(e^x-4\right)}{8}+\frac{\ln\left(4+e^x\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(16-exp(2*x)),x)
```

```
[Out] -1/8*ln(exp(x)-4)+1/8*ln(4+exp(x))
```

Maxima [A] time = 0.817722, size = 20, normalized size = 1.67

$$\frac{1}{8}\log\left(e^{x}+4\right)-\frac{1}{8}\log\left(e^{x}-4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 16),x, algorithm="maxima")
```

```
[Out] 1/8*log(e^x + 4) - 1/8*log(e^x - 4)
```

Fricas [A] time = 0.231038, size = 20, normalized size = 1.67

$$\frac{1}{8}\log\left(e^{x}+4\right)-\frac{1}{8}\log\left(e^{x}-4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 16),x, algorithm="fricas")
```

```
[Out] 1/8*log(e^x + 4) - 1/8*log(e^x - 4)
```

Sympy [A] time = 0.095026, size = 15, normalized size = 1.25

$$-\frac{\log\left(e^{x}-4\right)}{8}+\frac{\log\left(e^{x}+4\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(16-exp(2*x)),x)
```

```
[Out] -log(exp(x) - 4)/8 + log(exp(x) + 4)/8
```

GIAC/XCAS [A] time = 0.23847, size = 22, normalized size = 1.83

$$\frac{1}{8}\ln\left(e^{x}+4\right)-\frac{1}{8}\ln\left(\left|e^{x}-4\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-e^x/(e^(2*x) - 16),x, algorithm="giac")
```

```
[Out] 1/8*ln(e^x + 4) - 1/8*ln(abs(e^x - 4))
```

3.649 $\int \frac{e^{5x}}{1+e^{10x}}\,dx$

Optimal. Leaf size=10

$$\frac{1}{5}\tan^{-1}\left(e^{5x}\right)$$

```
[Out] ArcTan[E^(5*x)]/5
```

Rubi [A] time = 0.0328427, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{1}{5}\tan^{-1}\left(e^{5x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(5*x)/(1 + E^(10*x)),x]

[Out] ArcTan[E^(5*x)]/5
```

Rubi in Sympy [A] time = 5.89509, size = 7, normalized size = 0.7

$$\frac{\operatorname{atan}\left(e^{5x}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(5*x)/(1+exp(10*x)),x)

[Out] atan(exp(5*x))/5
```

Mathematica [A] time = 0.00634014, size = 10, normalized size = 1.

$$\frac{1}{5}\tan^{-1}\left(e^{5x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(5*x)/(1 + E^(10*x)),x]

[Out] ArcTan[E^(5*x)]/5
```

Maple [A] time = 0.006, size = 8, normalized size = 0.8

$$\frac{\arctan\left(\left(e^{x}\right)^{5}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(5*x)/(1+exp(10*x)),x)
```

```
[Out] 1/5*arctan(exp(x)^5)
```

Maxima [A] time = 0.868714, size = 9, normalized size = 0.9

$$\frac{1}{5}\arctan\left(e^{(5x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(5*x)/(e^(10*x) + 1),x, algorithm="maxima")
```

```
[Out] 1/5*arctan(e^(5*x))
```

Fricas [A] time = 0.246733, size = 9, normalized size = 0.9

$$\frac{1}{5}\arctan\left(e^{(5x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(5*x)/(e^(10*x) + 1),x, algorithm="fricas")
```

```
[Out] 1/5*arctan(e^(5*x))
```

Sympy [A] time = 0.102071, size = 17, normalized size = 1.7

$$\operatorname{RootSum}\left(100z^2 + 1, \left(i \mapsto i\log\left(10i + e^{5x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(5*x)/(1+exp(10*x)),x)
```

```
[Out] RootSum(100*_z**2 + 1, Lambda(_i, _i*log(10*_i + exp(5*x))))
```

GIAC/XCAS [A] time = 0.235747, size = 9, normalized size = 0.9

$$\frac{1}{5}\arctan\left(e^{(5x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(5*x)/(e^(10*x) + 1),x, algorithm="giac")
```

```
[Out] 1/5*arctan(e^(5*x))
```

3.650 $\int \frac{e^{4x}}{\sqrt{16+e^{8x}}} \, dx$

Optimal. Leaf size=14

$$\frac{1}{4}\sinh^{-1}\left(\frac{e^{4x}}{4}\right)$$

```
[Out] ArcSinh[E^(4*x)/4]/4
```

Rubi [A] time = 0.0379647, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{1}{4}\sinh^{-1}\left(\frac{e^{4x}}{4}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x)/Sqrt[16 + E^(8*x)],x]

[Out] ArcSinh[E^(4*x)/4]/4
```

Rubi in Sympy [A] time = 5.76476, size = 8, normalized size = 0.57

$$\frac{\operatorname{asinh}\left(\frac{e^{4x}}{4}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x)/(16+exp(8*x))**(1/2),x)

[Out] asinh(exp(4*x)/4)/4
```

Mathematica [A] time = 0.0135382, size = 14, normalized size = 1.

$$\frac{1}{4}\sinh^{-1}\left(\frac{e^{4x}}{4}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x)/Sqrt[16 + E^(8*x)],x]

[Out] ArcSinh[E^(4*x)/4]/4
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int e^{4x}\frac{1}{\sqrt{16+e^{8x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x)/(16+exp(8*x))^(1/2),x)
```

[Out] int(exp(4*x)/(16+exp(8*x))^(1/2),x)

Maxima [A] time = 0.891278, size = 12, normalized size = 0.86

$$\frac{1}{4} \operatorname{arsinh}\left(\frac{1}{4} e^{(4x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(4*x)/sqrt(e^(8*x) + 16),x, algorithm="maxima")
```

```
[Out] 1/4*arcsinh(1/4*e^(4*x))
```

Fricas [A] time = 0.256091, size = 24, normalized size = 1.71

$$-\frac{1}{4} \log\left(\sqrt{e^{(8x)} + 16} - e^{(4x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(4*x)/sqrt(e^(8*x) + 16),x, algorithm="fricas")
```

```
[Out] -1/4*log(sqrt(e^(8*x) + 16) - e^(4*x))
```

Sympy [A] time = 0.610141, size = 8, normalized size = 0.57

$$\frac{\operatorname{asinh}\left(\frac{e^{4x}}{4}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x)/(16+exp(8*x))**(1/2),x)
```

```
[Out] asinh(exp(4*x)/4)/4
```

GIAC/XCAS [A] time = 0.22485, size = 24, normalized size = 1.71

$$-\frac{1}{4} \ln\left(\sqrt{e^{(8x)} + 16} - e^{(4x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(4*x)/sqrt(e^(8*x) + 16),x, algorithm="giac")
```

```
[Out] -1/4*ln(sqrt(e^(8*x) + 16) - e^(4*x))
```

3.651 $\int e^{4x^3} x^2 \cos\left(7x^3\right)\, dx$

Optimal. Leaf size=35

$$\frac{7}{195} e^{4x^3} \sin\left(7x^3\right) + \frac{4}{195} e^{4x^3} \cos\left(7x^3\right)$$

```
[Out] (4*E^(4*x^3)*Cos[7*x^3])/195 + (7*E^(4*x^3)*Sin[7*x^3])/195
```

Rubi [A] time = 0.29185, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{7}{195} e^{4x^3} \sin\left(7x^3\right) + \frac{4}{195} e^{4x^3} \cos\left(7x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(4*x^3)*x^2*Cos[7*x^3],x]
```

```
[Out] (4*E^(4*x^3)*Cos[7*x^3])/195 + (7*E^(4*x^3)*Sin[7*x^3])/195
```

Rubi in Sympy [A] time = 12.4995, size = 32, normalized size = 0.91

$$\frac{7e^{4x^3} \sin\left(7x^3\right)}{195} + \frac{4e^{4x^3} \cos\left(7x^3\right)}{195}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(4*x**3)*x**2*cos(7*x**3),x)
```

```
[Out] 7*exp(4*x**3)*sin(7*x**3)/195 + 4*exp(4*x**3)*cos(7*x**3)/195
```

Mathematica [A] time = 0.0294429, size = 28, normalized size = 0.8

$$\frac{1}{195} e^{4x^3} \left(7 \sin\left(7x^3\right) + 4 \cos\left(7x^3\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(4*x^3)*x^2*Cos[7*x^3],x]
```

```
[Out] (E^(4*x^3)*(4*Cos[7*x^3] + 7*Sin[7*x^3]))/195
```

Maple [A] time = 0.037, size = 53, normalized size = 1.5

$$1 \left(\frac{14\, e^{4\, x^3}}{195} \tan\left(\frac{7\, x^3}{2}\right) - \frac{4\, e^{4\, x^3}}{195} \left(\tan\left(\frac{7\, x^3}{2}\right)\right)^2 + \frac{4\, e^{4\, x^3}}{195} \right) \left(1 + \left(\tan\left(\frac{7\, x^3}{2}\right)\right)^2\right)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(4*x^3)*x^2*cos(7*x^3),x)
```

```
[Out] (14/195*exp(4*x^3)*tan(7/2*x^3)-4/195*exp(4*x^3)*tan(7/2*x^3)^2+4
/195*exp(4*x^3))/(1+tan(7/2*x^3)^2)
```

Maxima [A] time = 0.815436, size = 39, normalized size = 1.11

$$\frac{4}{195} \cos\left(7 x^3\right) e^{\left(4 x^3\right)} + \frac{7}{195} e^{\left(4 x^3\right)} \sin\left(7 x^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*cos(7*x^3)*e^(4*x^3),x, algorithm="maxima")
```

```
[Out] 4/195*cos(7*x^3)*e^(4*x^3) + 7/195*e^(4*x^3)*sin(7*x^3)
```

Fricas [A] time = 0.271841, size = 39, normalized size = 1.11

$$\frac{4}{195} \cos\left(7 x^3\right) e^{\left(4 x^3\right)} + \frac{7}{195} e^{\left(4 x^3\right)} \sin\left(7 x^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*cos(7*x^3)*e^(4*x^3),x, algorithm="fricas")
```

```
[Out] 4/195*cos(7*x^3)*e^(4*x^3) + 7/195*e^(4*x^3)*sin(7*x^3)
```

Sympy [A] time = 2.54623, size = 32, normalized size = 0.91

$$\frac{7e^{4x^3} \sin\left(7x^3\right)}{195} + \frac{4e^{4x^3} \cos\left(7x^3\right)}{195}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(4*x**3)*x**2*cos(7*x**3),x)
```

```
[Out] 7*exp(4*x**3)*sin(7*x**3)/195 + 4*exp(4*x**3)*cos(7*x**3)/195
```

GIAC/XCAS [A] time = 0.248135, size = 34, normalized size = 0.97

$$\frac{1}{195} \left(4 \cos\left(7 x^3\right) + 7 \sin\left(7 x^3\right)\right) e^{\left(4 x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*cos(7*x^3)*e^(4*x^3),x, algorithm="giac")
```

```
[Out] 1/195*(4*cos(7*x^3) + 7*sin(7*x^3))*e^(4*x^3)
```

3.652 $\int e^{1+x^2} x \, dx$

Optimal. Leaf size=11

$$\frac{e^{x^2+1}}{2}$$

```
[Out] E^(1 + x^2)/2
```

Rubi [A] time = 0.0145803, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{e^{x^2+1}}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(1 + x^2)*x,x]

[Out] E^(1 + x^2)/2
```

Rubi in Sympy [A] time = 2.08503, size = 7, normalized size = 0.64

$$\frac{e^{x^2+1}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**2+1)*x,x)

[Out] exp(x**2 + 1)/2
```

Mathematica [A] time = 0.00278257, size = 11, normalized size = 1.

$$\frac{e^{x^2+1}}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(1 + x^2)*x,x]

[Out] E^(1 + x^2)/2
```

Maple [A] time = 0.001, size = 9, normalized size = 0.8

$$\frac{e^{x^2+1}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^2+1)*x,x)
```

```
[Out] 1/2*exp(x^2+1)
```

Maxima [A] time = 0.795319, size = 11, normalized size = 1.

$$\frac{1}{2}\,e^{\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(x^2 + 1),x, algorithm="maxima")
```

```
[Out] 1/2*e^(x^2 + 1)
```

Fricas [A] time = 0.347828, size = 11, normalized size = 1.

$$\frac{1}{2}\,e^{\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(x^2 + 1),x, algorithm="fricas")
```

```
[Out] 1/2*e^(x^2 + 1)
```

Sympy [A] time = 0.055877, size = 7, normalized size = 0.64

$$\frac{e^{x^2+1}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(x**2+1)*x,x)
```

```
[Out] exp(x**2 + 1)/2
```

GIAC/XCAS [A] time = 0.296166, size = 11, normalized size = 1.

$$\frac{1}{2}\,e^{\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^(x^2 + 1),x, algorithm="giac")
```

```
[Out] 1/2*e^(x^2 + 1)
```

3.653 $\int e^{1+x^3} x^2 \, dx$

Optimal. Leaf size=11

$$\frac{e^{x^3+1}}{3}$$

```
[Out] E^(1 + x^3)/3
```

Rubi [A] time = 0.024096, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{e^{x^3+1}}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(1 + x^3)*x^2,x]

[Out] E^(1 + x^3)/3
```

Rubi in Sympy [A] time = 2.85131, size = 7, normalized size = 0.64

$$\frac{e^{x^3+1}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**3+1)*x**2,x)

[Out] exp(x**3 + 1)/3
```

Mathematica [A] time = 0.00320751, size = 11, normalized size = 1.

$$\frac{e^{x^3+1}}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(1 + x^3)*x^2,x]

[Out] E^(1 + x^3)/3
```

Maple [A] time = 0.003, size = 9, normalized size = 0.8

$$\frac{e^{x^3+1}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^3+1)*x^2,x)
```

```
[Out] 1/3*exp(x^3+1)
```

Maxima [A] time = 0.831565, size = 11, normalized size = 1.

$$\frac{1}{3}e^{(x^3+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(x^3 + 1),x, algorithm="maxima")
```

```
[Out] 1/3*e^(x^3 + 1)
```

Fricas [A] time = 0.262835, size = 11, normalized size = 1.

$$\frac{1}{3}e^{(x^3+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(x^3 + 1),x, algorithm="fricas")
```

```
[Out] 1/3*e^(x^3 + 1)
```

Sympy [A] time = 0.060588, size = 7, normalized size = 0.64

$$\frac{e^{x^3+1}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**3+1)*x**2,x)
```

```
[Out] exp(x**3 + 1)/3
```

GIAC/XCAS [A] time = 0.226586, size = 11, normalized size = 1.

$$\frac{1}{3}e^{(x^3+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^(x^3 + 1),x, algorithm="giac")
```

```
[Out] 1/3*e^(x^3 + 1)
```

3.654 $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} \, dx$

Optimal. Leaf size=9

$$2e^{\sqrt{x}}$$

```
[Out] 2*E^Sqrt[x]
```

Rubi [A] time = 0.0169082, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$2e^{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^Sqrt[x]/Sqrt[x],x]

[Out] 2*E^Sqrt[x]
```

Rubi in Sympy [A] time = 2.76199, size = 7, normalized size = 0.78

$$2e^{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**(1/2))/x**(1/2),x)

[Out] 2*exp(sqrt(x))
```

Mathematica [A] time = 0.00321647, size = 9, normalized size = 1.

$$2e^{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^Sqrt[x]/Sqrt[x],x]

[Out] 2*E^Sqrt[x]
```

Maple [A] time = 0.004, size = 7, normalized size = 0.8

$$2\,e^{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^(1/2))/x^(1/2),x)

[Out] 2*exp(x^(1/2))
```

Maxima [A] time = 0.770171, size = 8, normalized size = 0.89

$$2\,e^{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^sqrt(x)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2*e^sqrt(x)
```

Fricas [A] time = 0.240813, size = 8, normalized size = 0.89

$$2\,e^{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^sqrt(x)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2*e^sqrt(x)
```

Sympy [A] time = 0.213809, size = 7, normalized size = 0.78

$$2e^{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**(1/2))/x**(1/2),x)
```

```
[Out] 2*exp(sqrt(x))
```

GIAC/XCAS [A] time = 0.2234, size = 8, normalized size = 0.89

$$2\,e^{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^sqrt(x)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2*e^sqrt(x)
```

3.655 $\int \frac{e^{\sqrt[3]{x}}}{x^{2/3}} \, dx$

Optimal. Leaf size=9

$$3e^{\sqrt[3]{x}}$$

```
[Out] 3*E^x^(1/3)
```

Rubi [A] time = 0.0184409, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$3e^{\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x^(1/3)/x^(2/3),x]

[Out] 3*E^x^(1/3)
```

Rubi in Sympy [A] time = 2.76859, size = 7, normalized size = 0.78

$$3e^{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**(1/3))/x**(2/3),x)

[Out] 3*exp(x**(1/3))
```

Mathematica [A] time = 0.00318319, size = 9, normalized size = 1.

$$3e^{\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^(1/3)/x^(2/3),x]

[Out] 3*E^x^(1/3)
```

Maple [A] time = 0.001, size = 7, normalized size = 0.8

$$3\,{{\rm e}^{\sqrt[3]{x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^(1/3))/x^(2/3),x)

[Out] 3*exp(x^(1/3))
```

Maxima [A] time = 0.768142, size = 8, normalized size = 0.89

$$3\,e^{\left(x^{\frac{1}{3}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x^(1/3))/x^(2/3),x, algorithm="maxima")

[Out] 3*e^(x^(1/3))
```

Fricas [A] time = 0.250086, size = 8, normalized size = 0.89

$$3\,e^{\left(x^{\frac{1}{3}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x^(1/3))/x^(2/3),x, algorithm="fricas")

[Out] 3*e^(x^(1/3))
```

Sympy [A] time = 0.502216, size = 7, normalized size = 0.78

$$3e^{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**(1/3))/x**(2/3),x)

[Out] 3*exp(x**(1/3))
```

GIAC/XCAS [A] time = 0.298076, size = 8, normalized size = 0.89

$$3\,e^{\left(x^{\frac{1}{3}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x^(1/3))/x^(2/3),x, algorithm="giac")

[Out] 3*e^(x^(1/3))
```

3.656 $\int e^{3x} \left(-8 + 2x^3 + x^5\right) \, dx$

Optimal. Leaf size=68

$$\frac{1}{3}e^{3x}x^5 - \frac{5}{9}e^{3x}x^4 + \frac{38}{27}e^{3x}x^3 - \frac{38}{27}e^{3x}x^2 + \frac{76}{81}e^{3x}x - \frac{724e^{3x}}{243}$$

```
[Out] (-724*E^(3*x))/243 + (76*E^(3*x)*x)/81 - (38*E^(3*x)*x^2)/27 + (3
8*E^(3*x)*x^3)/27 - (5*E^(3*x)*x^4)/9 + (E^(3*x)*x^5)/3
```

Rubi [A] time = 0.16355, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$

$$\frac{1}{3}e^{3x}x^5 - \frac{5}{9}e^{3x}x^4 + \frac{38}{27}e^{3x}x^3 - \frac{38}{27}e^{3x}x^2 + \frac{76}{81}e^{3x}x - \frac{724e^{3x}}{243}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(3*x)*(-8 + 2*x^3 + x^5),x]
```

```
[Out] (-724*E^(3*x))/243 + (76*E^(3*x)*x)/81 - (38*E^(3*x)*x^2)/27 + (3
8*E^(3*x)*x^3)/27 - (5*E^(3*x)*x^4)/9 + (E^(3*x)*x^5)/3
```

Rubi in Sympy [A] time = 13.0511, size = 63, normalized size = 0.93

$$\frac{x^5e^{3x}}{3} - \frac{5x^4e^{3x}}{9} + \frac{38x^3e^{3x}}{27} - \frac{38x^2e^{3x}}{27} + \frac{76xe^{3x}}{81} - \frac{724e^{3x}}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(3*x)*(x**5+2*x**3-8),x)
```

```
[Out] x**5*exp(3*x)/3 - 5*x**4*exp(3*x)/9 + 38*x**3*exp(3*x)/27 - 38*x*
*2*exp(3*x)/27 + 76*x*exp(3*x)/81 - 724*exp(3*x)/243
```

Mathematica [A] time = 0.00824244, size = 34, normalized size = 0.5

$$\frac{1}{243}e^{3x}\left(81x^5 - 135x^4 + 342x^3 - 342x^2 + 228x - 724\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(3*x)*(-8 + 2*x^3 + x^5),x]
```

```
[Out] (E^(3*x)*(-724 + 228*x - 342*x^2 + 342*x^3 - 135*x^4 + 81*x^5))/2
43
```

Maple [A] time = 0.009, size = 32, normalized size = 0.5

$$\frac{e^{3x}\left(81x^5 - 135x^4 + 342x^3 - 342x^2 + 228x - 724\right)}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(3*x)*(x^5+2*x^3-8),x)
```

```
[Out] 1/243*exp(3*x)*(81*x^5-135*x^4+342*x^3-342*x^2+228*x-724)
```

Maxima [A] time = 0.784615, size = 80, normalized size = 1.18

$$\frac{1}{243}\left(81\,x^5 - 135\,x^4 + 180\,x^3 - 180\,x^2 + 120\,x - 40\right)e^{(3\,x)} + \frac{2}{27}\left(9\,x^3 - 9\,x^2 + 6\,x - 2\right)e^{(3\,x)} - \frac{8}{3}\,e^{(3\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^5 + 2*x^3 - 8)*e^(3*x),x, algorithm="maxima")
```

```
[Out] 1/243*(81*x^5 - 135*x^4 + 180*x^3 - 180*x^2 + 120*x - 40)*e^(3*x)
 + 2/27*(9*x^3 - 9*x^2 + 6*x - 2)*e^(3*x) - 8/3*e^(3*x)
```

Fricas [A] time = 0.222788, size = 42, normalized size = 0.62

$$\frac{1}{243}\left(81\,x^5 - 135\,x^4 + 342\,x^3 - 342\,x^2 + 228\,x - 724\right)e^{(3\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^5 + 2*x^3 - 8)*e^(3*x),x, algorithm="fricas")
```

```
[Out] 1/243*(81*x^5 - 135*x^4 + 342*x^3 - 342*x^2 + 228*x - 724)*e^(3*x
)
```

Sympy [A] time = 0.083765, size = 31, normalized size = 0.46

$$\frac{\left(81x^5 - 135x^4 + 342x^3 - 342x^2 + 228x - 724\right)e^{3x}}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(3*x)*(x**5+2*x**3-8),x)
```

```
[Out] (81*x**5 - 135*x**4 + 342*x**3 - 342*x**2 + 228*x - 724)*exp(3*x)
/243
```

GIAC/XCAS [A] time = 0.259901, size = 42, normalized size = 0.62

$$\frac{1}{243}\left(81\,x^5 - 135\,x^4 + 342\,x^3 - 342\,x^2 + 228\,x - 724\right)e^{(3\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^5 + 2*x^3 - 8)*e^(3*x),x, algorithm="giac")
```

```
[Out] 1/243*(81*x^5 - 135*x^4 + 342*x^3 - 342*x^2 + 228*x - 724)*e^(3*x
)
```

3.657 $\int (e^x + x)^2 \, dx$

Optimal. Leaf size=28

$$\frac{x^3}{3} + 2e^x x - 2e^x + \frac{e^{2x}}{2}$$

```
[Out] -2*E^x + E^(2*x)/2 + 2*E^x*x + x^3/3
```

Rubi [A] time = 0.0383548, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429

$$\frac{x^3}{3} + 2e^x x - 2e^x + \frac{e^{2x}}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x + x)^2,x]

[Out] -2*E^x + E^(2*x)/2 + 2*E^x*x + x^3/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (x + e^x)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(x)+x)**2,x)

[Out] Integral((x + exp(x))**2, x)
```

Mathematica [A] time = 0.00919695, size = 26, normalized size = 0.93

$$\frac{x^3}{3} + \frac{e^{2x}}{2} + e^x(2x - 2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x + x)^2,x]

[Out] E^(2*x)/2 + x^3/3 + E^x*(-2 + 2*x)
```

Maple [A] time = 0.004, size = 22, normalized size = 0.8

$$\frac{x^3}{3} + \frac{(e^x)^2}{2} + 2\,x e^x - 2\,e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(x)+x)^2,x)
```

```
[Out] 1/3*x^3+1/2*exp(x)^2+2*x*exp(x)-2*exp(x)
```

Maxima [A] time = 0.752882, size = 26, normalized size = 0.93

$$\frac{1}{3}x^3 + 2(x-1)e^x + \frac{1}{2}e^{(2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + e^x)^2,x, algorithm="maxima")

[Out] 1/3*x^3 + 2*(x - 1)*e^x + 1/2*e^(2*x)
```

Fricas [A] time = 0.259051, size = 26, normalized size = 0.93

$$\frac{1}{3}x^3 + 2(x-1)e^x + \frac{1}{2}e^{(2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + e^x)^2,x, algorithm="fricas")

[Out] 1/3*x^3 + 2*(x - 1)*e^x + 1/2*e^(2*x)
```

Sympy [A] time = 0.075287, size = 20, normalized size = 0.71

$$\frac{x^3}{3} + \frac{(4x-4)e^x}{2} + \frac{e^{2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((exp(x)+x)**2,x)

[Out] x**3/3 + (4*x - 4)*exp(x)/2 + exp(2*x)/2
```

GIAC/XCAS [A] time = 0.234164, size = 26, normalized size = 0.93

$$\frac{1}{3}x^3 + 2(x-1)e^x + \frac{1}{2}e^{(2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + e^x)^2,x, algorithm="giac")

[Out] 1/3*x^3 + 2*(x - 1)*e^x + 1/2*e^(2*x)
```

3.658 $\int e^{-4x}\left(e^x+e^{2x}+e^{3x}\right)\,dx$

Optimal. Leaf size=26

$$-\frac{1}{3}e^{-3x}-\frac{e^{-2x}}{2}-e^{-x}$$

```
[Out] -1/(3*E^(3*x)) - 1/(2*E^(2*x)) - E^(-x)
```

Rubi [A] time = 0.0371094, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{1}{3}e^{-3x}-\frac{e^{-2x}}{2}-e^{-x}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x + E^(2*x) + E^(3*x))/E^(4*x),x]

[Out] -1/(3*E^(3*x)) - 1/(2*E^(2*x)) - E^(-x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\left(e^{3x}+e^{2x}+e^x\right)e^{-4x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(x)+exp(2*x)+exp(3*x))/exp(4*x),x)

[Out] Integral((exp(3*x) + exp(2*x) + exp(x))*exp(-4*x), x)
```

Mathematica [A] time = 0.00799734, size = 23, normalized size = 0.88

$$-\frac{1}{6}e^{-3x}\left(3e^x+6e^{2x}+2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x + E^(2*x) + E^(3*x))/E^(4*x),x]

[Out] -(2 + 3*E^x + 6*E^(2*x))/(6*E^(3*x))
```

Maple [A] time = 0.005, size = 20, normalized size = 0.8

$$-\frac{1}{3\left(e^x\right)^3}-\frac{1}{2\left(e^x\right)^2}-\left(e^x\right)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(x)+exp(2*x)+exp(3*x))/exp(4*x),x)
```

```
[Out] -1/3/exp(x)^3-1/2/exp(x)^2-1/exp(x)
```

Maxima [A] time = 0.827033, size = 26, normalized size = 1.

$$-e^{(-x)} - \frac{1}{2}\,e^{(-2\,x)} - \frac{1}{3}\,e^{(-3\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e^(3*x) + e^(2*x) + e^x)*e^(-4*x),x, algorithm="maxima")
```

```
[Out] -e^(-x) - 1/2*e^(-2*x) - 1/3*e^(-3*x)
```

Fricas [A] time = 0.245652, size = 24, normalized size = 0.92

$$-\frac{1}{6}\left(6\,e^{(2\,x)} + 3\,e^{x} + 2\right)e^{(-3\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e^(3*x) + e^(2*x) + e^x)*e^(-4*x),x, algorithm="fricas")
```

```
[Out] -1/6*(6*e^(2*x) + 3*e^x + 2)*e^(-3*x)
```

Sympy [A] time = 0.090276, size = 22, normalized size = 0.85

$$-e^{-x} - \frac{e^{-2x}}{2} - \frac{e^{-3x}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((exp(x)+exp(2*x)+exp(3*x))/exp(4*x),x)
```

```
[Out] -exp(-x) - exp(-2*x)/2 - exp(-3*x)/3
```

GIAC/XCAS [A] time = 0.241365, size = 24, normalized size = 0.92

$$-\frac{1}{6}\left(6\,e^{(2\,x)} + 3\,e^{x} + 2\right)e^{(-3\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e^(3*x) + e^(2*x) + e^x)*e^(-4*x),x, algorithm="giac")
```

```
[Out] -1/6*(6*e^(2*x) + 3*e^x + 2)*e^(-3*x)
```

3.659 $\int \frac{e^x}{1+2e^x+e^{2x}} \, dx$

Optimal. Leaf size=9

$$-\frac{1}{e^x+1}$$

```
[Out] -(1 + E^x)^(-1)
```

Rubi [A] time = 0.0394427, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$-\frac{1}{e^x+1}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(1 + 2*E^x + E^(2*x)),x]

[Out] -(1 + E^x)^(-1)
```

Rubi in Sympy [A] time = 15.5527, size = 20, normalized size = 2.22

$$-\frac{2e^x+2}{2\left(e^{2x}+2e^x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(1+2*exp(x)+exp(2*x)),x)

[Out] -(2*exp(x) + 2)/(2*(exp(2*x) + 2*exp(x) + 1))
```

Mathematica [A] time = 0.00478343, size = 9, normalized size = 1.

$$-\frac{1}{e^x+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(1 + 2*E^x + E^(2*x)),x]

[Out] -(1 + E^x)^(-1)
```

Maple [A] time = 0.009, size = 9, normalized size = 1.

$$-\left(1+e^x\right)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(1+2*exp(x)+exp(2*x)),x)

[Out] -1/(1+exp(x))
```

Maxima [A] time = 0.784926, size = 11, normalized size = 1.22

$$-\frac{1}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 2*e^x + 1),x, algorithm="maxima")
```

```
[Out] -1/(e^x + 1)
```

Fricas [A] time = 0.22964, size = 11, normalized size = 1.22

$$-\frac{1}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 2*e^x + 1),x, algorithm="fricas")
```

```
[Out] -1/(e^x + 1)
```

Sympy [A] time = 0.056382, size = 7, normalized size = 0.78

$$-\frac{1}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(1+2*exp(x)+exp(2*x)),x)
```

```
[Out] -1/(exp(x) + 1)
```

GIAC/XCAS [A] time = 0.267192, size = 11, normalized size = 1.22

$$-\frac{1}{e^x + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 2*e^x + 1),x, algorithm="giac")
```

```
[Out] -1/(e^x + 1)
```

3.660 $\int e^{-x} \cos(3x) \, dx$

Optimal. Leaf size=27

$$\frac{3}{10}e^{-x}\sin(3x) - \frac{1}{10}e^{-x}\cos(3x)$$

```
[Out] -Cos[3*x]/(10*E^x) + (3*Sin[3*x])/(10*E^x)
```

Rubi [A] time = 0.0196015, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{3}{10}e^{-x}\sin(3x) - \frac{1}{10}e^{-x}\cos(3x)$$

Antiderivative was successfully verified.

```
[In]  Int[Cos[3*x]/E^x,x]
```

```
[Out] -Cos[3*x]/(10*E^x) + (3*Sin[3*x])/(10*E^x)
```

Rubi in Sympy [A] time = 2.80563, size = 20, normalized size = 0.74

$$\frac{3e^{-x}\sin(3x)}{10} - \frac{e^{-x}\cos(3x)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(cos(3*x)/exp(x),x)
```

```
[Out] 3*exp(-x)*sin(3*x)/10 - exp(-x)*cos(3*x)/10
```

Mathematica [A] time = 0.0192131, size = 20, normalized size = 0.74

$$-\frac{1}{10}e^{-x}(\cos(3x) - 3\sin(3x))$$

Antiderivative was successfully verified.

```
[In]  Integrate[Cos[3*x]/E^x,x]
```

```
[Out] -(Cos[3*x] - 3*Sin[3*x])/(10*E^x)
```

Maple [A] time = 0.013, size = 22, normalized size = 0.8

$$-\frac{e^{-x}\cos(3x)}{10} + \frac{3e^{-x}\sin(3x)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(cos(3*x)/exp(x),x)
```

```
[Out] -1/10*exp(-x)*cos(3*x)+3/10*exp(-x)*sin(3*x)
```

Maxima [A] time = 0.76099, size = 23, normalized size = 0.85

$$-\frac{1}{10}\,(\cos(3\,x) - 3\,\sin(3\,x))e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x)*e^(-x),x, algorithm="maxima")
```

```
[Out] -1/10*(cos(3*x) - 3*sin(3*x))*e^(-x)
```

Fricas [A] time = 0.246223, size = 28, normalized size = 1.04

$$-\frac{1}{10}\,\cos(3\,x)\,e^{(-x)} + \frac{3}{10}\,e^{(-x)}\sin(3\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x)*e^(-x),x, algorithm="fricas")
```

```
[Out] -1/10*cos(3*x)*e^(-x) + 3/10*e^(-x)*sin(3*x)
```

Sympy [A] time = 0.747825, size = 20, normalized size = 0.74

$$\frac{3e^{-x}\sin(3x)}{10} - \frac{e^{-x}\cos(3x)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x)/exp(x),x)
```

```
[Out] 3*exp(-x)*sin(3*x)/10 - exp(-x)*cos(3*x)/10
```

GIAC/XCAS [A] time = 0.224404, size = 23, normalized size = 0.85

$$-\frac{1}{10}\,(\cos(3\,x) - 3\,\sin(3\,x))e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x)*e^(-x),x, algorithm="giac")
```

```
[Out] -1/10*(cos(3*x) - 3*sin(3*x))*e^(-x)
```

3.661 $\int \frac{e^{2x}}{2+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=17

$$2\log(e^x+2)-\log(e^x+1)$$

```
[Out] -Log[1 + E^x] + 2*Log[2 + E^x]
```

Rubi [A] time = 0.0546851, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$2\log(e^x+2)-\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In] Int[E^(2*x)/(2 + 3*E^x + E^(2*x)),x]

[Out] -Log[1 + E^x] + 2*Log[2 + E^x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{2x}}{e^{2x}+3e^x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(2*x)/(2+3*exp(x)+exp(2*x)),x)

[Out] Integral(exp(2*x)/(exp(2*x) + 3*exp(x) + 2), x)
```

Mathematica [A] time = 0.00973932, size = 17, normalized size = 1.

$$2\log(e^x+2)-\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(2*x)/(2 + 3*E^x + E^(2*x)),x]

[Out] -Log[1 + E^x] + 2*Log[2 + E^x]
```

Maple [A] time = 0.011, size = 16, normalized size = 0.9

$$-\ln(1+e^x)+2\ln(2+e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(2*x)/(2+3*exp(x)+exp(2*x)),x)

[Out] -ln(1+exp(x))+2*ln(2+exp(x))
```

Maxima [A] time = 0.776713, size = 20, normalized size = 1.18

$$2\log\left(e^{x}+2\right)-\log\left(e^{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^(2*x) + 3*e^x + 2),x, algorithm="maxima")

[Out] 2*log(e^x + 2) - log(e^x + 1)
```

Fricas [A] time = 0.241979, size = 20, normalized size = 1.18

$$2\log\left(e^{x}+2\right)-\log\left(e^{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^(2*x) + 3*e^x + 2),x, algorithm="fricas")

[Out] 2*log(e^x + 2) - log(e^x + 1)
```

Sympy [A] time = 0.114886, size = 14, normalized size = 0.82

$$-\log\left(e^{x}+1\right)+2\log\left(e^{x}+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(2+3*exp(x)+exp(2*x)),x)

[Out] -log(exp(x) + 1) + 2*log(exp(x) + 2)
```

GIAC/XCAS [A] time = 0.264985, size = 20, normalized size = 1.18

$$2\ln\left(e^{x}+2\right)-\ln\left(e^{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^(2*x) + 3*e^x + 2),x, algorithm="giac")

[Out] 2*ln(e^x + 2) - ln(e^x + 1)
```

3.662 $\int \frac{e^{2x}}{1+e^x} dx$

Optimal. Leaf size=12

$$e^x - \log(e^x + 1)$$

```
[Out] E^x - Log[1 + E^x]
```

Rubi [A] time = 0.0370441, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$e^x - \log(e^x + 1)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(1 + E^x),x]

[Out] E^x - Log[1 + E^x]
```

Rubi in Sympy [A] time = 6.51944, size = 8, normalized size = 0.67

$$e^x - \log(e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(1+exp(x)),x)

[Out] exp(x) - log(exp(x) + 1)
```

Mathematica [A] time = 0.00435113, size = 12, normalized size = 1.

$$e^x - \log(e^x + 1)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(1 + E^x),x]

[Out] E^x - Log[1 + E^x]
```

Maple [A] time = 0.003, size = 11, normalized size = 0.9

$$e^x - \ln(1 + e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(1+exp(x)),x)

[Out] exp(x)-ln(1+exp(x))
```

Maxima [A] time = 0.79206, size = 14, normalized size = 1.17

$$e^{x} - \log\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1),x, algorithm="maxima")
```

```
[Out] e^x - log(e^x + 1)
```

Fricas [A] time = 0.242577, size = 14, normalized size = 1.17

$$e^{x} - \log\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1),x, algorithm="fricas")
```

```
[Out] e^x - log(e^x + 1)
```

Sympy [A] time = 0.071216, size = 8, normalized size = 0.67

$$e^{x} - \log\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(1+exp(x)),x)
```

```
[Out] exp(x) - log(exp(x) + 1)
```

GIAC/XCAS [A] time = 0.242151, size = 14, normalized size = 1.17

$$e^{x} - \ln\left(e^{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1),x, algorithm="giac")
```

```
[Out] e^x - ln(e^x + 1)
```

3.663 $\int e^{3x} \cos(5x) \, dx$

Optimal. Leaf size=27

$$\frac{5}{34} e^{3x} \sin(5x) + \frac{3}{34} e^{3x} \cos(5x)$$

```
[Out] (3*E^(3*x)*Cos[5*x])/34 + (5*E^(3*x)*Sin[5*x])/34
```

Rubi [A] time = 0.0206559, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{5}{34} e^{3x} \sin(5x) + \frac{3}{34} e^{3x} \cos(5x)$$

Antiderivative was successfully verified.

```
[In] Int[E^(3*x)*Cos[5*x],x]

[Out] (3*E^(3*x)*Cos[5*x])/34 + (5*E^(3*x)*Sin[5*x])/34
```

Rubi in Sympy [A] time = 2.68413, size = 26, normalized size = 0.96

$$\frac{5e^{3x} \sin(5x)}{34} + \frac{3e^{3x} \cos(5x)}{34}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(3*x)*cos(5*x),x)

[Out] 5*exp(3*x)*sin(5*x)/34 + 3*exp(3*x)*cos(5*x)/34
```

Mathematica [A] time = 0.0180669, size = 22, normalized size = 0.81

$$\frac{1}{34} e^{3x} (5 \sin(5x) + 3 \cos(5x))$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(3*x)*Cos[5*x],x]

[Out] (E^(3*x)*(3*Cos[5*x] + 5*Sin[5*x]))/34
```

Maple [A] time = 0.01, size = 22, normalized size = 0.8

$$\frac{3 e^{3x} \cos(5x)}{34} + \frac{5 e^{3x} \sin(5x)}{34}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(3*x)*cos(5*x),x)
```

```
[Out] 3/34*exp(3*x)*cos(5*x)+5/34*exp(3*x)*sin(5*x)
```

Maxima [A] time = 0.763626, size = 26, normalized size = 0.96

$$\frac{1}{34}\left(3\cos(5x)+5\sin(5x)\right)e^{(3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(5*x)*e^(3*x),x, algorithm="maxima")
```

```
[Out] 1/34*(3*cos(5*x) + 5*sin(5*x))*e^(3*x)
```

Fricas [A] time = 0.243649, size = 28, normalized size = 1.04

$$\frac{3}{34}\cos(5x)e^{(3x)}+\frac{5}{34}e^{(3x)}\sin(5x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(5*x)*e^(3*x),x, algorithm="fricas")
```

```
[Out] 3/34*cos(5*x)*e^(3*x) + 5/34*e^(3*x)*sin(5*x)
```

Sympy [A] time = 0.324701, size = 26, normalized size = 0.96

$$\frac{5e^{3x}\sin(5x)}{34}+\frac{3e^{3x}\cos(5x)}{34}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(3*x)*cos(5*x),x)
```

```
[Out] 5*exp(3*x)*sin(5*x)/34 + 3*exp(3*x)*cos(5*x)/34
```

GIAC/XCAS [A] time = 0.24361, size = 26, normalized size = 0.96

$$\frac{1}{34}\left(3\cos(5x)+5\sin(5x)\right)e^{(3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(5*x)*e^(3*x),x, algorithm="giac")
```

```
[Out] 1/34*(3*cos(5*x) + 5*sin(5*x))*e^(3*x)
```

3.664 $\int e^x \operatorname{sech}(e^x)\, dx$

Optimal. Leaf size=5

$$\tan^{-1}(\sinh(e^x))$$

```
[Out] ArcTan[Sinh[E^x]]
```

Rubi [A] time = 0.0174164, antiderivative size = 5, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$\tan^{-1}(\sinh(e^x))$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Sech[E^x],x]
```

```
[Out] ArcTan[Sinh[E^x]]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int^{e^x} \frac{1}{\cosh(x)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*sech(exp(x)),x)
```

```
[Out] Integral(1/cosh(x), (x, exp(x)))
```

Mathematica [B] time = 0.0220196, size = 11, normalized size = 2.2

$$2\tan^{-1}\left(\tanh\left(\frac{e^x}{2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Sech[E^x],x]
```

```
[Out] 2*ArcTan[Tanh[E^x/2]]
```

Maple [A] time = 0.03, size = 5, normalized size = 1.

$$\arctan(\sinh(e^x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*sech(exp(x)),x)
```

```
[Out] arctan(sinh(exp(x)))
```

Maxima [A] time = 0.767643, size = 5, normalized size = 1.

$$\arctan(\sinh(e^x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x*sech(e^x),x, algorithm="maxima")
```

```
[Out] arctan(sinh(e^x))
```

Fricas [A] time = 0.241562, size = 22, normalized size = 4.4

$$2 \arctan(\cosh(\cosh(x) + \sinh(x)) + \sinh(\cosh(x) + \sinh(x)))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x*sech(e^x),x, algorithm="fricas")
```

```
[Out] 2*arctan(cosh(cosh(x) + sinh(x)) + sinh(cosh(x) + sinh(x)))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int e^x \operatorname{sech}(e^x)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*sech(exp(x)),x)
```

```
[Out] Integral(exp(x)*sech(exp(x)), x)
```

GIAC/XCAS [A] time = 0.281186, size = 8, normalized size = 1.6

$$2 \arctan\left(e^{(e^x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x*sech(e^x),x, algorithm="giac")
```

```
[Out] 2*arctan(e^(e^x))
```

3.665 $\int \frac{e^{-x}}{1+2e^x} \, dx$

Optimal. Leaf size=21

$$-2x - e^{-x} + 2\log(2e^x + 1)$$

```
[Out] -E^(-x) - 2*x + 2*Log[1 + 2*E^x]
```

Rubi [A] time = 0.0461435, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-2x - e^{-x} + 2\log(2e^x + 1)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(E^x*(1 + 2*E^x)),x]

[Out] -E^(-x) - 2*x + 2*Log[1 + 2*E^x]
```

Rubi in Sympy [A] time = 8.8051, size = 20, normalized size = 0.95

$$2\log(2e^x + 1) - 2\log(e^x) - e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/exp(x)/(1+2*exp(x)),x)

[Out] 2*log(2*exp(x) + 1) - 2*log(exp(x)) - exp(-x)
```

Mathematica [A] time = 0.0108356, size = 18, normalized size = 0.86

$$2\log(e^{-x} + 2) - e^{-x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(E^x*(1 + 2*E^x)),x]

[Out] -E^(-x) + 2*Log[2 + E^(-x)]
```

Maple [A] time = 0.01, size = 22, normalized size = 1.1

$$-(e^x)^{-1} - 2\ln(e^x) + 2\ln(1 + 2e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/exp(x)/(1+2*exp(x)),x)

[Out] -1/exp(x)-2*ln(exp(x))+2*ln(1+2*exp(x))
```

Maxima [A] time = 0.777558, size = 22, normalized size = 1.05

$$-e^{(-x)} + 2 \log\left(e^{(-x)} + 2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/(2*e^x + 1),x, algorithm="maxima")
```

```
[Out] -e^(-x) + 2*log(e^(-x) + 2)
```

Fricas [A] time = 0.24371, size = 32, normalized size = 1.52

$$-(2\,xe^{x} - 2\,e^{x}\log(2\,e^{x} + 1) + 1)e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/(2*e^x + 1),x, algorithm="fricas")
```

```
[Out] -(2*x*e^x - 2*e^x*log(2*e^x + 1) + 1)*e^(-x)
```

Sympy [A] time = 0.082598, size = 17, normalized size = 0.81

$$-2x + 2\log\left(e^{x} + \frac{1}{2}\right) - e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/exp(x)/(1+2*exp(x)),x)
```

```
[Out] -2*x + 2*log(exp(x) + 1/2) - exp(-x)
```

GIAC/XCAS [A] time = 0.304884, size = 26, normalized size = 1.24

$$-2\,x - e^{(-x)} + 2\ln(2\,e^{x} + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/(2*e^x + 1),x, algorithm="giac")
```

```
[Out] -2*x - e^(-x) + 2*ln(2*e^x + 1)
```

3.666 $\int e^x \cos(4+3x)\,dx$

Optimal. Leaf size=27

$$\frac{3}{10}e^x\sin(3x+4)+\frac{1}{10}e^x\cos(3x+4)$$

```
[Out] (E^x*Cos[4 + 3*x])/10 + (3*E^x*Sin[4 + 3*x])/10
```

Rubi [A] time = 0.0192777, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{3}{10}e^x\sin(3x+4)+\frac{1}{10}e^x\cos(3x+4)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Cos[4 + 3*x],x]
```

```
[Out] (E^x*Cos[4 + 3*x])/10 + (3*E^x*Sin[4 + 3*x])/10
```

Rubi in Sympy [A] time = 2.52161, size = 24, normalized size = 0.89

$$\frac{3e^x\sin(3x+4)}{10}+\frac{e^x\cos(3x+4)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*cos(4+3*x),x)
```

```
[Out] 3*exp(x)*sin(3*x + 4)/10 + exp(x)*cos(3*x + 4)/10
```

Mathematica [A] time = 0.0260844, size = 22, normalized size = 0.81

$$\frac{1}{10}e^x(3\sin(3x+4)+\cos(3x+4))$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Cos[4 + 3*x],x]
```

```
[Out] (E^x*(Cos[4 + 3*x] + 3*Sin[4 + 3*x]))/10
```

Maple [A] time = 0.007, size = 22, normalized size = 0.8

$$\frac{e^x\cos(4+3x)}{10}+\frac{3e^x\sin(4+3x)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*cos(4+3*x),x)
```

```
[Out] 1/10*exp(x)*cos(4+3*x)+3/10*exp(x)*sin(4+3*x)
```

Maxima [A] time = 0.772715, size = 26, normalized size = 0.96

$$\frac{1}{10}\left(\cos\left(3x+4\right)+3\sin\left(3x+4\right)\right)e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x + 4)*e^x,x, algorithm="maxima")
```

```
[Out] 1/10*(cos(3*x + 4) + 3*sin(3*x + 4))*e^x
```

Fricas [A] time = 0.240848, size = 28, normalized size = 1.04

$$\frac{1}{10}\cos\left(3x+4\right)e^{x}+\frac{3}{10}e^{x}\sin\left(3x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x + 4)*e^x,x, algorithm="fricas")
```

```
[Out] 1/10*cos(3*x + 4)*e^x + 3/10*e^x*sin(3*x + 4)
```

Sympy [A] time = 0.319667, size = 24, normalized size = 0.89

$$\frac{3e^{x}\sin\left(3x+4\right)}{10}+\frac{e^{x}\cos\left(3x+4\right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*cos(4+3*x),x)
```

```
[Out] 3*exp(x)*sin(3*x + 4)/10 + exp(x)*cos(3*x + 4)/10
```

GIAC/XCAS [A] time = 0.440208, size = 26, normalized size = 0.96

$$\frac{1}{10}\left(\cos\left(3x+4\right)+3\sin\left(3x+4\right)\right)e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(cos(3*x + 4)*e^x,x, algorithm="giac")
```

```
[Out] 1/10*(cos(3*x + 4) + 3*sin(3*x + 4))*e^x
```

3.667 $\int e^x \sec^3(1-e^x)\,dx$

Optimal. Leaf size=34

$$-\frac{1}{2}\tanh^{-1}(\sin(1-e^x))-\frac{1}{2}\tan(1-e^x)\sec(1-e^x)$$

```
[Out] -ArcTanh[Sin[1 - E^x]]/2 - (Sec[1 - E^x]*Tan[1 - E^x])/2
```

Rubi [A] time = 0.0492211, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214

$$-\frac{1}{2}\tanh^{-1}(\sin(1-e^x))-\frac{1}{2}\tan(1-e^x)\sec(1-e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Sec[1 - E^x]^3,x]

[Out] -ArcTanh[Sin[1 - E^x]]/2 - (Sec[1 - E^x]*Tan[1 - E^x])/2
```

Rubi in Sympy [A] time = 7.95984, size = 26, normalized size = 0.76

$$\frac{\sin(e^x-1)}{2\cos^2(e^x-1)}+\frac{\operatorname{atanh}(\sin(e^x-1))}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*sec(-1+exp(x))**3,x)

[Out] sin(exp(x) - 1)/(2*cos(exp(x) - 1)**2) + atanh(sin(exp(x) - 1))/2
```

Mathematica [B] time = 0.31992, size = 79, normalized size = 2.32

$$\frac{1}{2}\left(-\tan(1-e^x)\sec(1-e^x)+\log\left(\cos\left(\frac{1}{2}(1-e^x)\right)-\sin\left(\frac{1}{2}(1-e^x)\right)\right)\right.$$
$$\left.-\log\left(\sin\left(\frac{1}{2}(1-e^x)\right)+\cos\left(\frac{1}{2}(1-e^x)\right)\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Sec[1 - E^x]^3,x]

[Out] (Log[Cos[(1 - E^x)/2] - Sin[(1 - E^x)/2]] - Log[Cos[(1 - E^x)/2]
+ Sin[(1 - E^x)/2]] - Sec[1 - E^x]*Tan[1 - E^x])/2
```

Maple [A] time = 0.076, size = 28, normalized size = 0.8

$$\frac{\sec(-1+e^x)\tan(-1+e^x)}{2}+\frac{\ln(\sec(-1+e^x)+\tan(-1+e^x))}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*sec(-1+exp(x))^3,x)
```

```
[Out] 1/2*sec(-1+exp(x))*tan(-1+exp(x))+1/2*ln(sec(-1+exp(x))+tan(-1+ex
p(x)))
```

Maxima [A] time = 0.796022, size = 53, normalized size = 1.56

$$-\frac{\sin\left(e^{x}-1\right)}{2\left(\sin\left(e^{x}-1\right)^{2}-1\right)}+\frac{1}{4}\log\left(\sin\left(e^{x}-1\right)+1\right)-\frac{1}{4}\log\left(\sin\left(e^{x}-1\right)-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x*sec(e^x - 1)^3,x, algorithm="maxima")
```

```
[Out] -1/2*sin(e^x - 1)/(sin(e^x - 1)^2 - 1) + 1/4*log(sin(e^x - 1) + 1
) - 1/4*log(sin(e^x - 1) - 1)
```

Fricas [A] time = 0.271534, size = 70, normalized size = 2.06

$$\frac{\cos\left(e^{x}-1\right)^{2}\log\left(\sin\left(e^{x}-1\right)+1\right)-\cos\left(e^{x}-1\right)^{2}\log\left(-\sin\left(e^{x}-1\right)+1\right)+2\sin\left(e^{x}-1\right)}{4\cos\left(e^{x}-1\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x*sec(e^x - 1)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(cos(e^x - 1)^2*log(sin(e^x - 1) + 1) - cos(e^x - 1)^2*log(-s
in(e^x - 1) + 1) + 2*sin(e^x - 1))/cos(e^x - 1)^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int e^{x}\sec^{3}\left(e^{x}-1\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*sec(-1+exp(x))**3,x)
```

```
[Out] Integral(exp(x)*sec(exp(x) - 1)**3, x)
```

GIAC/XCAS [A] time = 0.342314, size = 55, normalized size = 1.62

$$-\frac{\sin\left(e^{x}-1\right)}{2\left(\sin\left(e^{x}-1\right)^{2}-1\right)}+\frac{1}{4}\ln\left(\sin\left(e^{x}-1\right)+1\right)-\frac{1}{4}\ln\left(-\sin\left(e^{x}-1\right)+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x*sec(e^x - 1)^3,x, algorithm="giac")
```

```
[Out] -1/2*sin(e^x - 1)/(sin(e^x - 1)^2 - 1) + 1/4*ln(sin(e^x - 1) + 1)
 - 1/4*ln(-sin(e^x - 1) + 1)
```

3.668 $\int (e^{-x}+e^x)\, x \, dx$

Optimal. Leaf size=26

$$-e^{-x}x+e^xx-e^{-x}-e^x$$

```
[Out] -E^(-x) - E^x - x/E^x + E^x*x
```

Rubi [A] time = 0.0307296, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$-e^{-x}x+e^xx-e^{-x}-e^x$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(-x) + E^x)*x,x]

[Out] -E^(-x) - E^x - x/E^x + E^x*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(e^x+e^{-x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(-x)+exp(x))*x,x)

[Out] Integral(x*(exp(x) + exp(-x)), x)
```

Mathematica [A] time = 0.0113936, size = 20, normalized size = 0.77

$$e^{-x}\left(e^{2x}(x-1)-x-1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(-x) + E^x)*x,x]

[Out] (-1 + E^(2*x)*(-1 + x) - x)/E^x
```

Maple [A] time = 0.003, size = 23, normalized size = 0.9

$$-\left(e^x\right)^{-1}-e^x-\frac{x}{e^x}+xe^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(-x)+exp(x))*x,x)

[Out] -1/exp(x)-exp(x)-x/exp(x)+x*exp(x)
```

Maxima [A] time = 0.769052, size = 22, normalized size = 0.85

$$-(x+1)e^{(-x)} + (x-1)e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(e^(-x) + e^x),x, algorithm="maxima")
```

```
[Out] -(x + 1)*e^(-x) + (x - 1)*e^x
```

Fricas [A] time = 0.247579, size = 24, normalized size = 0.92

$$\left((x-1)e^{(2x)} - x - 1\right)e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(e^(-x) + e^x),x, algorithm="fricas")
```

```
[Out] ((x - 1)*e^(2*x) - x - 1)*e^(-x)
```

Sympy [A] time = 0.079202, size = 14, normalized size = 0.54

$$(-x-1)\,e^{-x} + (x-1)\,e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((exp(-x)+exp(x))*x,x)
```

```
[Out] (-x - 1)*exp(-x) + (x - 1)*exp(x)
```

GIAC/XCAS [A] time = 0.31731, size = 22, normalized size = 0.85

$$-(x+1)e^{(-x)} + (x-1)e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(e^(-x) + e^x),x, algorithm="giac")
```

```
[Out] -(x + 1)*e^(-x) + (x - 1)*e^x
```

3.669 $\int \frac{e^x}{2+3e^x+e^{2x}}\,dx$

Optimal. Leaf size=15

$$\log\left(e^x+1\right)-\log\left(e^x+2\right)$$

```
[Out] Log[1 + E^x] - Log[2 + E^x]
```

Rubi [A] time = 0.0471533, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$\log\left(e^x+1\right)-\log\left(e^x+2\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(2 + 3*E^x + E^(2*x)),x]

[Out] Log[1 + E^x] - Log[2 + E^x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(2+3*exp(x)+exp(2*x)),x)

[Out] Timed out
```

Mathematica [A] time = 0.0068166, size = 15, normalized size = 1.

$$\log\left(e^x+1\right)-\log\left(e^x+2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(2 + 3*E^x + E^(2*x)),x]

[Out] Log[1 + E^x] - Log[2 + E^x]
```

Maple [A] time = 0.009, size = 14, normalized size = 0.9

$$\ln\left(1+e^x\right)-\ln\left(2+e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(2+3*exp(x)+exp(2*x)),x)

[Out] ln(1+exp(x))-ln(2+exp(x))
```

Maxima [A] time = 0.771553, size = 18, normalized size = 1.2

$$-\log(e^x + 2) + \log(e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 3*e^x + 2),x, algorithm="maxima")
```

```
[Out] -log(e^x + 2) + log(e^x + 1)
```

Fricas [A] time = 0.255223, size = 18, normalized size = 1.2

$$-\log(e^x + 2) + \log(e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 3*e^x + 2),x, algorithm="fricas")
```

```
[Out] -log(e^x + 2) + log(e^x + 1)
```

Sympy [A] time = 0.102234, size = 12, normalized size = 0.8

$$\log(e^x + 1) - \log(e^x + 2)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(2+3*exp(x)+exp(2*x)),x)
```

```
[Out] log(exp(x) + 1) - log(exp(x) + 2)
```

GIAC/XCAS [A] time = 0.296672, size = 18, normalized size = 1.2

$$-\ln(e^x + 2) + \ln(e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) + 3*e^x + 2),x, algorithm="giac")
```

```
[Out] -ln(e^x + 2) + ln(e^x + 1)
```

3.670 $\int \frac{e^{2x}}{\sqrt[3]{1+e^x}}\,dx$

Optimal. Leaf size=27

$$\frac{3}{5}\left(e^x+1\right)^{5/3}-\frac{3}{2}\left(e^x+1\right)^{2/3}$$

```
[Out] (-3*(1 + E^x)^(2/3))/2 + (3*(1 + E^x)^(5/3))/5
```

Rubi [A] time = 0.0431299, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{3}{5}\left(e^x+1\right)^{5/3}-\frac{3}{2}\left(e^x+1\right)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(1 + E^x)^(1/3),x]

[Out] (-3*(1 + E^x)^(2/3))/2 + (3*(1 + E^x)^(5/3))/5
```

Rubi in Sympy [A] time = 10.2437, size = 22, normalized size = 0.81

$$\frac{3\left(e^x+1\right)^{\frac{5}{3}}}{5}-\frac{3\left(e^x+1\right)^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(1+exp(x))**(1/3),x)

[Out] 3*(exp(x) + 1)**(5/3)/5 - 3*(exp(x) + 1)**(2/3)/2
```

Mathematica [A] time = 0.0151099, size = 21, normalized size = 0.78

$$\left(\frac{3e^x}{5}-\frac{9}{10}\right)\left(e^x+1\right)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(1 + E^x)^(1/3),x]

[Out] (-9/10 + (3*E^x)/5)*(1 + E^x)^(2/3)
```

Maple [A] time = 0.003, size = 18, normalized size = 0.7

$$-\frac{3}{2}\left(1+e^x\right)^{\frac{2}{3}}+\frac{3}{5}\left(1+e^x\right)^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(1+exp(x))^(1/3),x)
```

```
[Out] -3/2*(1+exp(x))^(2/3)+3/5*(1+exp(x))^(5/3)
```

Maxima [A] time = 0.753374, size = 23, normalized size = 0.85

$$\frac{3}{5}\left(e^{x}+1\right)^{\frac{5}{3}}-\frac{3}{2}\left(e^{x}+1\right)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1)^(1/3),x, algorithm="maxima")

[Out] 3/5*(e^x + 1)^(5/3) - 3/2*(e^x + 1)^(2/3)
```

Fricas [A] time = 0.240626, size = 19, normalized size = 0.7

$$\frac{3}{10}\left(2\,e^{x}-3\right)\left(e^{x}+1\right)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1)^(1/3),x, algorithm="fricas")

[Out] 3/10*(2*e^x - 3)*(e^x + 1)^(2/3)
```

Sympy [A] time = 1.19071, size = 22, normalized size = 0.81

$$\frac{3\left(e^{x}+1\right)^{\frac{5}{3}}}{5}-\frac{3\left(e^{x}+1\right)^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(1+exp(x))**(1/3),x)

[Out] 3*(exp(x) + 1)**(5/3)/5 - 3*(exp(x) + 1)**(2/3)/2
```

GIAC/XCAS [A] time = 0.298379, size = 23, normalized size = 0.85

$$\frac{3}{5}\left(e^{x}+1\right)^{\frac{5}{3}}-\frac{3}{2}\left(e^{x}+1\right)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1)^(1/3),x, algorithm="giac")

[Out] 3/5*(e^x + 1)^(5/3) - 3/2*(e^x + 1)^(2/3)
```

3.671 $\int \frac{e^{2x}}{\sqrt[4]{1+e^x}}\,dx$

Optimal. Leaf size=27

$$\frac{4}{7}(e^x+1)^{7/4}-\frac{4}{3}(e^x+1)^{3/4}$$

```
[Out] (-4*(1 + E^x)^(3/4))/3 + (4*(1 + E^x)^(7/4))/7
```

Rubi [A] time = 0.0439317, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{4}{7}(e^x+1)^{7/4}-\frac{4}{3}(e^x+1)^{3/4}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(2*x)/(1 + E^x)^(1/4),x]

[Out] (-4*(1 + E^x)^(3/4))/3 + (4*(1 + E^x)^(7/4))/7
```

Rubi in Sympy [A] time = 8.61719, size = 22, normalized size = 0.81

$$\frac{4(e^x+1)^{\frac{7}{4}}}{7}-\frac{4(e^x+1)^{\frac{3}{4}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(2*x)/(1+exp(x))**(1/4),x)

[Out] 4*(exp(x) + 1)**(7/4)/7 - 4*(exp(x) + 1)**(3/4)/3
```

Mathematica [A] time = 0.0143324, size = 21, normalized size = 0.78

$$\left(\frac{4e^x}{7}-\frac{16}{21}\right)(e^x+1)^{3/4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(2*x)/(1 + E^x)^(1/4),x]

[Out] (-16/21 + (4*E^x)/7)*(1 + E^x)^(3/4)
```

Maple [A] time = 0.003, size = 18, normalized size = 0.7

$$-\frac{4}{3}(1+e^x)^{\frac{3}{4}}+\frac{4}{7}(1+e^x)^{\frac{7}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(2*x)/(1+exp(x))^(1/4),x)
```

```
[Out] -4/3*(1+exp(x))^(3/4)+4/7*(1+exp(x))^(7/4)
```

Maxima [A] time = 0.803854, size = 23, normalized size = 0.85

$$\frac{4}{7}(e^x+1)^{\frac{7}{4}} - \frac{4}{3}(e^x+1)^{\frac{3}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1)^(1/4),x, algorithm="maxima")
```

```
[Out] 4/7*(e^x + 1)^(7/4) - 4/3*(e^x + 1)^(3/4)
```

Fricas [A] time = 0.246531, size = 19, normalized size = 0.7

$$\frac{4}{21}(3e^x-4)(e^x+1)^{\frac{3}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1)^(1/4),x, algorithm="fricas")
```

```
[Out] 4/21*(3*e^x - 4)*(e^x + 1)^(3/4)
```

Sympy [A] time = 2.34952, size = 22, normalized size = 0.81

$$\frac{4(e^x+1)^{\frac{7}{4}}}{7} - \frac{4(e^x+1)^{\frac{3}{4}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(2*x)/(1+exp(x))**(1/4),x)
```

```
[Out] 4*(exp(x) + 1)**(7/4)/7 - 4*(exp(x) + 1)**(3/4)/3
```

GIAC/XCAS [A] time = 0.237319, size = 23, normalized size = 0.85

$$\frac{4}{7}(e^x+1)^{\frac{7}{4}} - \frac{4}{3}(e^x+1)^{\frac{3}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(2*x)/(e^x + 1)^(1/4),x, algorithm="giac")
```

```
[Out] 4/7*(e^x + 1)^(7/4) - 4/3*(e^x + 1)^(3/4)
```

3.672 $\int \frac{-e^x+2e^{2x}}{\sqrt{-1-6e^x+3e^{2x}}}\,dx$

Optimal. Leaf size=62

$$\frac{2}{3}\sqrt{-6e^x+3e^{2x}-1}-\frac{\tanh^{-1}\left(\frac{\sqrt{3}(1-e^x)}{\sqrt{-6e^x+3e^{2x}-1}}\right)}{\sqrt{3}}$$

```
[Out] (2*Sqrt[-1 - 6*E^x + 3*E^(2*x)])/3 - ArcTanh[(Sqrt[3]*(1 - E^x))/
Sqrt[-1 - 6*E^x + 3*E^(2*x)]]/Sqrt[3]
```

Rubi [A] time = 0.0964829, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{2}{3}\sqrt{-6e^x+3e^{2x}-1}-\frac{\tanh^{-1}\left(\frac{\sqrt{3}(1-e^x)}{\sqrt{-6e^x+3e^{2x}-1}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(-E^x + 2*E^(2*x))/Sqrt[-1 - 6*E^x + 3*E^(2*x)],x]
```

```
[Out] (2*Sqrt[-1 - 6*E^x + 3*E^(2*x)])/3 - ArcTanh[(Sqrt[3]*(1 - E^x))/
Sqrt[-1 - 6*E^x + 3*E^(2*x)]]/Sqrt[3]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2e^{2x}-e^x}{\sqrt{3e^{2x}-6e^x-1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((-exp(x)+2*exp(2*x))/(-1-6*exp(x)+3*exp(2*x))**(1/2),x)
```

```
[Out] Integral((2*exp(2*x) - exp(x))/sqrt(3*exp(2*x) - 6*exp(x) - 1), x
)
```

Mathematica [A] time = 0.0749669, size = 57, normalized size = 0.92

$$\frac{2}{3}\sqrt{-6e^x+3e^{2x}-1}+\frac{\log\left(-\sqrt{-18e^x+9e^{2x}-3}-3e^x+3\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-E^x + 2*E^(2*x))/Sqrt[-1 - 6*E^x + 3*E^(2*x)],x]
```

```
[Out] (2*Sqrt[-1 - 6*E^x + 3*E^(2*x)])/3 + Log[3 - 3*E^x - Sqrt[-3 - 18
*E^x + 9*E^(2*x)]]/Sqrt[3]
```

Maple [A] time = 0.025, size = 50, normalized size = 0.8

$$\frac{\sqrt{3}}{3}\ln\left(\frac{(-3+3\,e^x)\sqrt{3}}{3}+\sqrt{-1-6\,e^x+3\,(e^x)^2}\right)+\frac{2}{3}\sqrt{-1-6\,e^x+3\,(e^x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-exp(x)+2*exp(2*x))/(-1-6*exp(x)+3*exp(2*x))^(1/2),x)
```

```
[Out] 1/3*ln(1/3*(-3+3*exp(x))*3^(1/2)+(-1-6*exp(x)+3*exp(x)^2)^(1/2))*
3^(1/2)+2/3*(-1-6*exp(x)+3*exp(x)^2)^(1/2)
```

Maxima [A] time = 0.856653, size = 65, normalized size = 1.05

$$\frac{1}{3}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3e^{(2x)}-6e^{x}-1}+6e^{x}-6\right)+\frac{2}{3}\sqrt{3e^{(2x)}-6e^{x}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*e^(2*x) - e^x)/sqrt(3*e^(2*x) - 6*e^x - 1),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(3)*log(2*sqrt(3)*sqrt(3*e^(2*x) - 6*e^x - 1) + 6*e^x - 6
) + 2/3*sqrt(3*e^(2*x) - 6*e^x - 1)
```

Fricas [A] time = 0.25258, size = 92, normalized size = 1.48

$$\frac{1}{18}\sqrt{3}\left(4\sqrt{3}\sqrt{3e^{(2x)}-6e^{x}-1}+3\log\left(3\sqrt{3e^{(2x)}-6e^{x}-1}(e^{x}-1)+3\sqrt{3}e^{(2x)}-6\sqrt{3}e^{x}+\sqrt{3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*e^(2*x) - e^x)/sqrt(3*e^(2*x) - 6*e^x - 1),x, algorithm="fricas")
```

```
[Out] 1/18*sqrt(3)*(4*sqrt(3)*sqrt(3*e^(2*x) - 6*e^x - 1) + 3*log(3*sqr
t(3*e^(2*x) - 6*e^x - 1)*(e^x - 1) + 3*sqrt(3)*e^(2*x) - 6*sqrt(3
)*e^x + sqrt(3)))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(2e^{x}-1)e^{x}}{\sqrt{3e^{2x}-6e^{x}-1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-exp(x)+2*exp(2*x))/(-1-6*exp(x)+3*exp(2*x))**(1/2),x)
```

```
[Out] Integral((2*exp(x) - 1)*exp(x)/sqrt(3*exp(2*x) - 6*exp(x) - 1), x
)
```

GIAC/XCAS [A] time = 0.259883, size = 66, normalized size = 1.06

$$-\frac{1}{3}\sqrt{3}\ln\left(\left|-\sqrt{3}e^{x}+\sqrt{3}+\sqrt{3e^{(2x)}-6e^{x}-1}\right|\right)+\frac{2}{3}\sqrt{3e^{(2x)}-6e^{x}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2*e^(2*x) - e^x)/sqrt(3*e^(2*x) - 6*e^x - 1),x, algorithm="giac")
```

```
[Out] -1/3*sqrt(3)*ln(abs(-sqrt(3)*e^x + sqrt(3) + sqrt(3*e^(2*x) - 6*e
^x - 1))) + 2/3*sqrt(3*e^(2*x) - 6*e^x - 1)
```

3.673 $\int e^x(-5x+x^2)\,dx$

Optimal. Leaf size=19

$$e^x x^2 - 7e^x x + 7e^x$$

```
[Out] 7*E^x - 7*E^x*x + E^x*x^2
```

Rubi [A] time = 0.0618329, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$

$$e^x x^2 - 7e^x x + 7e^x$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*(-5*x + x^2),x]

[Out] 7*E^x - 7*E^x*x + E^x*x^2
```

Rubi in Sympy [A] time = 6.88675, size = 17, normalized size = 0.89

$$x^2e^x - 7xe^x + 7e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(x**2-5*x),x)

[Out] x**2*exp(x) - 7*x*exp(x) + 7*exp(x)
```

Mathematica [A] time = 0.00369516, size = 12, normalized size = 0.63

$$e^x(x^2 - 7x + 7)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*(-5*x + x^2),x]

[Out] E^x*(7 - 7*x + x^2)
```

Maple [A] time = 0.004, size = 12, normalized size = 0.6

$$e^x(x^2 - 7x + 7)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(x^2-5*x),x)

[Out] exp(x)*(x^2-7*x+7)
```

Maxima [A] time = 0.771672, size = 26, normalized size = 1.37

$$\left(x^2 - 2\,x + 2\right)e^x - 5\,(x - 1)e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 - 5*x)*e^x,x, algorithm="maxima")

[Out] (x^2 - 2*x + 2)*e^x - 5*(x - 1)*e^x
```

Fricas [A] time = 0.229057, size = 15, normalized size = 0.79

$$\left(x^2 - 7\,x + 7\right)e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 - 5*x)*e^x,x, algorithm="fricas")

[Out] (x^2 - 7*x + 7)*e^x
```

Sympy [A] time = 0.066902, size = 10, normalized size = 0.53

$$\left(x^2 - 7x + 7\right)e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(x**2-5*x),x)

[Out] (x**2 - 7*x + 7)*exp(x)
```

GIAC/XCAS [A] time = 0.257759, size = 15, normalized size = 0.79

$$\left(x^2 - 7\,x + 7\right)e^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 - 5*x)*e^x,x, algorithm="giac")

[Out] (x^2 - 7*x + 7)*e^x
```

3.674 $\int e^{3x}\left(-x+x^2\right)\,dx$

Optimal. Leaf size=32

$$\frac{1}{3}e^{3x}x^2-\frac{5}{9}e^{3x}x+\frac{5e^{3x}}{27}$$

```
[Out] (5*E^(3*x))/27 - (5*E^(3*x)*x)/9 + (E^(3*x)*x^2)/3
```

Rubi [A] time = 0.0747055, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{1}{3}e^{3x}x^2-\frac{5}{9}e^{3x}x+\frac{5e^{3x}}{27}$$

Antiderivative was successfully verified.

```
[In] Int[E^(3*x)*(-x + x^2),x]

[Out] (5*E^(3*x))/27 - (5*E^(3*x)*x)/9 + (E^(3*x)*x^2)/3
```

Rubi in Sympy [A] time = 7.06908, size = 27, normalized size = 0.84

$$\frac{x^2e^{3x}}{3}-\frac{5xe^{3x}}{9}+\frac{5e^{3x}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(3*x)*(x**2-x),x)

[Out] x**2*exp(3*x)/3 - 5*x*exp(3*x)/9 + 5*exp(3*x)/27
```

Mathematica [A] time = 0.00468231, size = 19, normalized size = 0.59

$$\frac{1}{27}e^{3x}\left(9x^2-15x+5\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(3*x)*(-x + x^2),x]

[Out] (E^(3*x)*(5 - 15*x + 9*x^2))/27
```

Maple [A] time = 0.003, size = 17, normalized size = 0.5

$$\frac{e^{3x}\left(9x^2-15x+5\right)}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(3*x)*(x^2-x),x)
```

```
[Out] 1/27*exp(3*x)*(9*x^2-15*x+5)
```

Maxima [A] time = 0.773357, size = 38, normalized size = 1.19

$$\frac{1}{27}\left(9x^2 - 6x + 2\right)e^{(3x)} - \frac{1}{9}(3x - 1)e^{(3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 - x)*e^(3*x),x, algorithm="maxima")

[Out] 1/27*(9*x^2 - 6*x + 2)*e^(3*x) - 1/9*(3*x - 1)*e^(3*x)
```

Fricas [A] time = 0.241892, size = 22, normalized size = 0.69

$$\frac{1}{27}\left(9x^2 - 15x + 5\right)e^{(3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 - x)*e^(3*x),x, algorithm="fricas")

[Out] 1/27*(9*x^2 - 15*x + 5)*e^(3*x)
```

Sympy [A] time = 0.070721, size = 15, normalized size = 0.47

$$\frac{\left(9x^2 - 15x + 5\right)e^{3x}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(3*x)*(x**2-x),x)

[Out] (9*x**2 - 15*x + 5)*exp(3*x)/27
```

GIAC/XCAS [A] time = 0.24122, size = 22, normalized size = 0.69

$$\frac{1}{27}\left(9x^2 - 15x + 5\right)e^{(3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 - x)*e^(3*x),x, algorithm="giac")

[Out] 1/27*(9*x^2 - 15*x + 5)*e^(3*x)
```

3.675 $\int e^{x^x} x^{2x}(1 + \log(x))\, dx$

Optimal. Leaf size=11

$$e^{x^x}\left(x^x - 1\right)$$

```
[Out] E^x^x*(-1 + x^x)
```

Rubi [F] time = 0.212078, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(e^{x^x} x^{2x}(1 + \log(x)), x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^x^x*x^(2*x)*(1 + Log[x]),x]
```

```
[Out] Defer[Int][E^x^x*x^(2*x), x] + Log[x]*Defer[Int][E^x^x*x^(2*x), x
] - Defer[Int][Defer[Int][E^x^x*x^(2*x), x]/x, x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^{2x}\left(\log(x) + 1\right) e^{x^x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**x)*x**(2*x)*(1+ln(x)),x)
```

```
[Out] Integral(x**(2*x)*(log(x) + 1)*exp(x**x), x)
```

Mathematica [A] time = 0.0110554, size = 11, normalized size = 1.

$$e^{x^x}\left(x^x - 1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^x*x^(2*x)*(1 + Log[x]),x]
```

```
[Out] E^x^x*(-1 + x^x)
```

Maple [B] time = 0.027, size = 22, normalized size = 2.

$$e^{\ln(x)x} e^{e^{\ln(x)x}} - e^{e^{\ln(x)x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^x)*x^(2*x)*(1+ln(x)),x)
```

```
[Out] exp(ln(x)*x)*exp(exp(ln(x)*x))-exp(exp(ln(x)*x))
```

Maxima [A] time = 0.915001, size = 14, normalized size = 1.27

$$(x^x - 1)e^{(x^x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2*x)*(log(x) + 1)*e^(x^x),x, algorithm="maxima")
```

```
[Out] (x^x - 1)*e^(x^x)
```

Fricas [A] time = 0.247699, size = 14, normalized size = 1.27

$$(x^x - 1)e^{(x^x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2*x)*(log(x) + 1)*e^(x^x),x, algorithm="fricas")
```

```
[Out] (x^x - 1)*e^(x^x)
```

Sympy [A] time = 0.822321, size = 8, normalized size = 0.73

$$(x^x - 1)\, e^{x^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**x)*x**(2*x)*(1+ln(x)),x)
```

```
[Out] (x**x - 1)*exp(x**x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int x^{2\,x}(\log{(x)} + 1)e^{(x^x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2*x)*(log(x) + 1)*e^(x^x),x, algorithm="giac")
```

```
[Out] integrate(x^(2*x)*(log(x) + 1)*e^(x^x), x)
```

3.676 $\int \frac{e^{5x}+e^{7x}}{e^{-x}+e^{x}} \, dx$

Optimal. Leaf size=9

$$\frac{e^{6x}}{6}$$

```
[Out] E^(6*x)/6
```

Rubi [A] time = 0.0395182, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{e^{6x}}{6}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(5*x) + E^(7*x))/(E^(-x) + E^x),x]

[Out] E^(6*x)/6
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(5*x)+exp(7*x))/(exp(-x)+exp(x)),x)

[Out] Timed out
```

Mathematica [A] time = 0.00153048, size = 9, normalized size = 1.

$$\frac{e^{6x}}{6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(5*x) + E^(7*x))/(E^(-x) + E^x),x]

[Out] E^(6*x)/6
```

Maple [A] time = 0.007, size = 7, normalized size = 0.8

$$\frac{(e^{x})^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(5*x)+exp(7*x))/(exp(-x)+exp(x)),x)
```

```
[Out] 1/6*exp(x)^6
```

Maxima [A] time = 0.75787, size = 8, normalized size = 0.89

$$\frac{1}{6}\,e^{(6\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(7*x) + e^(5*x))/(e^(-x) + e^x),x, algorithm="maxima")
```

```
[Out] 1/6*e^(6*x)
```

Fricas [A] time = 0.232911, size = 8, normalized size = 0.89

$$\frac{1}{6}\,e^{(6\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(7*x) + e^(5*x))/(e^(-x) + e^x),x, algorithm="fricas")
```

```
[Out] 1/6*e^(6*x)
```

Sympy [A] time = 0.102995, size = 5, normalized size = 0.56

$$\frac{e^{6x}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((exp(5*x)+exp(7*x))/(exp(-x)+exp(x)),x)
```

```
[Out] exp(6*x)/6
```

GIAC/XCAS [A] time = 0.391504, size = 8, normalized size = 0.89

$$\frac{1}{6}\,e^{(6\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(7*x) + e^(5*x))/(e^(-x) + e^x),x, algorithm="giac")
```

```
[Out] 1/6*e^(6*x)
```

3.677 $\int x^{-2-\frac{1}{x}}(1-\log(x))\,dx$

Optimal. Leaf size=9

$$-x^{-1/x}$$

```
[Out] -x^(-x^(-1))
```

Rubi [F] time = 0.102966, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(x^{-2-\frac{1}{x}}(1-\log(x)),x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[x^(-2 - x^(-1))*(1 - Log[x]),x]

[Out] Defer[Int][x^(-2 - x^(-1)), x] - Log[x]*Defer[Int][x^(-2 - x^(-1)
), x] + Defer[Int][Defer[Int][x^(-2 - x^(-1)), x]/x, x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^{-2-\frac{1}{x}}\left(-\log\left(x\right)+1\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-2-1/x)*(1-ln(x)),x)

[Out] Integral(x**(-2 - 1/x)*(-log(x) + 1), x)
```

Mathematica [A] time = 0.0115296, size = 9, normalized size = 1.

$$-x^{-1/x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-2 - x^(-1))*(1 - Log[x]),x]

[Out] -x^(-x^(-1))
```

Maple [A] time = 0.025, size = 18, normalized size = 2.

$$-x^2x^{-\frac{2x+1}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-2-1/x)*(1-ln(x)),x)

[Out] -x^2*x^(-(2*x+1)/x)
```

Maxima [A] time = 0.86336, size = 12, normalized size = 1.33

$$-\frac{1}{x^{\left(\frac{1}{x}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^(-1/x - 2)*(log(x) - 1),x, algorithm="maxima")

[Out] -1/x^(1/x)
```

Fricas [A] time = 0.236697, size = 24, normalized size = 2.67

$$-\frac{x^2}{x^{\frac{2x+1}{x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^(-1/x - 2)*(log(x) - 1),x, algorithm="fricas")

[Out] -x^2/x^((2*x + 1)/x)
```

Sympy [A] time = 0.560478, size = 12, normalized size = 1.33

$$-x^2x^{-2-\frac{1}{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-2-1/x)*(1-ln(x)),x)

[Out] -x**2*x**(-2 - 1/x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$undef$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^(-1/x - 2)*(log(x) - 1),x, algorithm="giac")

[Out] undef
```

3.678 $\int (a+be^x)^2 \, dx$

Optimal. Leaf size=25

$$a^2x + 2abe^x + \frac{1}{2}b^2e^{2x}$$

```
[Out] 2*a*b*E^x + (b^2*E^(2*x))/2 + a^2*x
```

Rubi [A] time = 0.0286238, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$a^2x + 2abe^x + \frac{1}{2}b^2e^{2x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*E^x)^2,x]

[Out] 2*a*b*E^x + (b^2*E^(2*x))/2 + a^2*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2 \log(e^x) + 2abe^x + b^2 \int^{e^x} x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b*exp(x))**2,x)

[Out] a**2*log(exp(x)) + 2*a*b*exp(x) + b**2*Integral(x, (x, exp(x)))
```

Mathematica [A] time = 0.00913199, size = 25, normalized size = 1.

$$a^2x + 2abe^x + \frac{1}{2}b^2e^{2x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*E^x)^2,x]

[Out] 2*a*b*E^x + (b^2*E^(2*x))/2 + a^2*x
```

Maple [A] time = 0.001, size = 24, normalized size = 1.

$$\frac{b^2(e^x)^2}{2} + 2\,abe^x + a^2\ln(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(x))^2,x)
```

```
[Out] 1/2*b^2*exp(x)^2+2*a*b*exp(x)+a^2*ln(exp(x))
```

Maxima [A] time = 0.755945, size = 28, normalized size = 1.12

$$a^2x + \frac{1}{2}\,b^2e^{(2\,x)} + 2\,abe^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^2,x, algorithm="maxima")
```

```
[Out] a^2*x + 1/2*b^2*e^(2*x) + 2*a*b*e^x
```

Fricas [A] time = 0.242349, size = 28, normalized size = 1.12

$$a^2x + \frac{1}{2}\,b^2e^{(2\,x)} + 2\,abe^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^2,x, algorithm="fricas")
```

```
[Out] a^2*x + 1/2*b^2*e^(2*x) + 2*a*b*e^x
```

Sympy [A] time = 0.105631, size = 22, normalized size = 0.88

$$a^2x + 2abe^x + \frac{b^2e^{2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(x))**2,x)
```

```
[Out] a**2*x + 2*a*b*exp(x) + b**2*exp(2*x)/2
```

GIAC/XCAS [A] time = 0.240068, size = 28, normalized size = 1.12

$$a^2x + \frac{1}{2}\,b^2e^{(2\,x)} + 2\,abe^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^2,x, algorithm="giac")
```

```
[Out] a^2*x + 1/2*b^2*e^(2*x) + 2*a*b*e^x
```

3.679 $\int (a+be^x)^3\,dx$

Optimal. Leaf size=40

$$a^3x+3a^2be^x+\frac{3}{2}ab^2e^{2x}+\frac{1}{3}b^3e^{3x}$$

```
[Out] 3*a^2*b*E^x + (3*a*b^2*E^(2*x))/2 + (b^3*E^(3*x))/3 + a^3*x
```

Rubi [A] time = 0.0393371, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$a^3x+3a^2be^x+\frac{3}{2}ab^2e^{2x}+\frac{1}{3}b^3e^{3x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*E^x)^3,x]
```

```
[Out] 3*a^2*b*E^x + (3*a*b^2*E^(2*x))/2 + (b^3*E^(3*x))/3 + a^3*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\log\left(e^x\right)+3a^2be^x+3ab^2\int^{e^x}x\,dx+\frac{b^3e^{3x}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b*exp(x))**3,x)
```

```
[Out] a**3*log(exp(x)) + 3*a**2*b*exp(x) + 3*a*b**2*Integral(x, (x, exp
(x))) + b**3*exp(3*x)/3
```

Mathematica [A] time = 0.0101908, size = 40, normalized size = 1.

$$a^3x+3a^2be^x+\frac{3}{2}ab^2e^{2x}+\frac{1}{3}b^3e^{3x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*E^x)^3,x]
```

```
[Out] 3*a^2*b*E^x + (3*a*b^2*E^(2*x))/2 + (b^3*E^(3*x))/3 + a^3*x
```

Maple [A] time = 0.001, size = 36, normalized size = 0.9

$$\frac{b^3\left(e^x\right)^3}{3}+\frac{3\,ab^2\left(e^x\right)^2}{2}+3\,a^2be^x+a^3\ln\left(e^x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(x))^3,x)
```

```
[Out] 1/3*b^3*exp(x)^3+3/2*a*b^2*exp(x)^2+3*a^2*b*exp(x)+a^3*ln(exp(x))
```

Maxima [A] time = 0.746033, size = 45, normalized size = 1.12

$$a^3x + \frac{1}{3}\,b^3e^{(3\,x)} + \frac{3}{2}\,ab^2e^{(2\,x)} + 3\,a^2be^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^3,x, algorithm="maxima")
```

```
[Out] a^3*x + 1/3*b^3*e^(3*x) + 3/2*a*b^2*e^(2*x) + 3*a^2*b*e^x
```

Fricas [A] time = 0.257728, size = 45, normalized size = 1.12

$$a^3x + \frac{1}{3}\,b^3e^{(3\,x)} + \frac{3}{2}\,ab^2e^{(2\,x)} + 3\,a^2be^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^3,x, algorithm="fricas")
```

```
[Out] a^3*x + 1/3*b^3*e^(3*x) + 3/2*a*b^2*e^(2*x) + 3*a^2*b*e^x
```

Sympy [A] time = 0.13468, size = 37, normalized size = 0.92

$$a^3x + 3a^2be^x + \frac{3ab^2e^{2x}}{2} + \frac{b^3e^{3x}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(x))**3,x)
```

```
[Out] a**3*x + 3*a**2*b*exp(x) + 3*a*b**2*exp(2*x)/2 + b**3*exp(3*x)/3
```

GIAC/XCAS [A] time = 0.220614, size = 45, normalized size = 1.12

$$a^3x + \frac{1}{3}\,b^3e^{(3\,x)} + \frac{3}{2}\,ab^2e^{(2\,x)} + 3\,a^2be^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^3,x, algorithm="giac")
```

```
[Out] a^3*x + 1/3*b^3*e^(3*x) + 3/2*a*b^2*e^(2*x) + 3*a^2*b*e^x
```

3.680 $\int (a + be^x)^4 \, dx$

Optimal. Leaf size=53

$$a^4x + 4a^3be^x + 3a^2b^2e^{2x} + \frac{4}{3}ab^3e^{3x} + \frac{1}{4}b^4e^{4x}$$

```
[Out] 4*a^3*b*E^x + 3*a^2*b^2*E^(2*x) + (4*a*b^3*E^(3*x))/3 + (b^4*E^(4
*x))/4 + a^4*x
```

Rubi [A] time = 0.050668, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$a^4x + 4a^3be^x + 3a^2b^2e^{2x} + \frac{4}{3}ab^3e^{3x} + \frac{1}{4}b^4e^{4x}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*E^x)^4,x]
```

```
[Out] 4*a^3*b*E^x + 3*a^2*b^2*E^(2*x) + (4*a*b^3*E^(3*x))/3 + (b^4*E^(4
*x))/4 + a^4*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^4 \log(e^x) + 4a^3be^x + 6a^2b^2 \int^{e^x} x \, dx + \frac{4ab^3e^{3x}}{3} + \frac{b^4e^{4x}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((a+b*exp(x))**4,x)
```

```
[Out] a**4*log(exp(x)) + 4*a**3*b*exp(x) + 6*a**2*b**2*Integral(x, (x,
exp(x))) + 4*a*b**3*exp(3*x)/3 + b**4*exp(4*x)/4
```

Mathematica [A] time = 0.0123917, size = 53, normalized size = 1.

$$a^4x + 4a^3be^x + 3a^2b^2e^{2x} + \frac{4}{3}ab^3e^{3x} + \frac{1}{4}b^4e^{4x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*E^x)^4,x]
```

```
[Out] 4*a^3*b*E^x + 3*a^2*b^2*E^(2*x) + (4*a*b^3*E^(3*x))/3 + (b^4*E^(4
*x))/4 + a^4*x
```

Maple [A] time = 0.003, size = 48, normalized size = 0.9

$$\frac{b^4 (e^x)^4}{4} + \frac{4\,ab^3 (e^x)^3}{3} + 3\,a^2b^2 (e^x)^2 + 4\,a^3be^x + a^4 \ln(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(x))^4,x)
```

```
[Out] 1/4*b^4*exp(x)^4+4/3*a*b^3*exp(x)^3+3*a^2*b^2*exp(x)^2+4*a^3*b*ex
p(x)+a^4*ln(exp(x))
```

Maxima [A] time = 0.762892, size = 61, normalized size = 1.15

$$a^4x + \frac{1}{4}\,b^4e^{(4\,x)} + \frac{4}{3}\,ab^3e^{(3\,x)} + 3\,a^2b^2e^{(2\,x)} + 4\,a^3be^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^4,x, algorithm="maxima")
```

```
[Out] a^4*x + 1/4*b^4*e^(4*x) + 4/3*a*b^3*e^(3*x) + 3*a^2*b^2*e^(2*x) +
 4*a^3*b*e^x
```

Fricas [A] time = 0.241483, size = 61, normalized size = 1.15

$$a^4x + \frac{1}{4}\,b^4e^{(4\,x)} + \frac{4}{3}\,ab^3e^{(3\,x)} + 3\,a^2b^2e^{(2\,x)} + 4\,a^3be^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^4,x, algorithm="fricas")
```

```
[Out] a^4*x + 1/4*b^4*e^(4*x) + 4/3*a*b^3*e^(3*x) + 3*a^2*b^2*e^(2*x) +
 4*a^3*b*e^x
```

Sympy [A] time = 0.166968, size = 51, normalized size = 0.96

$$a^4x + 4a^3be^x + 3a^2b^2e^{2x} + \frac{4ab^3e^{3x}}{3} + \frac{b^4e^{4x}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(x))**4,x)
```

```
[Out] a**4*x + 4*a**3*b*exp(x) + 3*a**2*b**2*exp(2*x) + 4*a*b**3*exp(3*
x)/3 + b**4*exp(4*x)/4
```

GIAC/XCAS [A] time = 0.301992, size = 61, normalized size = 1.15

$$a^4x + \frac{1}{4}\,b^4e^{(4\,x)} + \frac{4}{3}\,ab^3e^{(3\,x)} + 3\,a^2b^2e^{(2\,x)} + 4\,a^3be^x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*e^x + a)^4,x, algorithm="giac")
```

```
[Out] a^4*x + 1/4*b^4*e^(4*x) + 4/3*a*b^3*e^(3*x) + 3*a^2*b^2*e^(2*x) +
 4*a^3*b*e^x
```

3.681 $\int \frac{1}{\sqrt{a+be^{c+dx}}}\,dx$

Optimal. Leaf size=32

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

```
[Out] (-2*ArcTanh[Sqrt[a + b*E^(c + d*x)]/Sqrt[a]])/(Sqrt[a]*d)
```

Rubi [A] time = 0.0539488, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In]  Int[1/Sqrt[a + b*E^(c + d*x)],x]
```

```
[Out] (-2*ArcTanh[Sqrt[a + b*E^(c + d*x)]/Sqrt[a]])/(Sqrt[a]*d)
```

Rubi in Sympy [A] time = 6.36645, size = 44, normalized size = 1.38

$$-\frac{2e^{-c-dx}e^{c+dx}\operatorname{atanh}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] -2*exp(-c - d*x)*exp(c + d*x)*atanh(sqrt(a + b*exp(c + d*x))/sqrt
(a))/(sqrt(a)*d)
```

Mathematica [A] time = 0.0287575, size = 32, normalized size = 1.

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/Sqrt[a + b*E^(c + d*x)],x]
```

```
[Out] (-2*ArcTanh[Sqrt[a + b*E^(c + d*x)]/Sqrt[a]])/(Sqrt[a]*d)
```

Maple [A] time = 0.012, size = 26, normalized size = 0.8

$$-2\,{\frac{1}{d\sqrt{a}}}{\it Artanh} \left({\frac{\sqrt{a+b{e^{dx+c}}}}{\sqrt{a}}} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a+b*exp(d*x+c))^(1/2),x)
```

```
[Out] -2*arctanh((a+b*exp(d*x+c))^(1/2)/a^(1/2))/d/a^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*e^(d*x + c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240798, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\left(\left(be^{(dx+c)}+2\,a\right)\sqrt{a}-2\,\sqrt{be^{(dx+c)}+a}a\right)e^{(-dx-c)}\right)}{\sqrt{a}d}, \frac{2\,\arctan\left(\frac{a}{\sqrt{be^{(dx+c)}+a}\sqrt{-a}}\right)}{\sqrt{-a}d}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*e^(d*x + c) + a),x, algorithm="fricas")
```

```
[Out] [log(((b*e^(d*x + c) + 2*a)*sqrt(a) - 2*sqrt(b*e^(d*x + c) + a)*a
)*e^(-d*x - c))/(sqrt(a)*d), 2*arctan(a/(sqrt(b*e^(d*x + c) + a)*
sqrt(-a)))/(sqrt(-a)*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+be^{c+dx}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(a + b*exp(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.227167, size = 39, normalized size = 1.22

$$\frac{2\,\arctan\left(\frac{\sqrt{be^{(dx+c)}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*e^(d*x + c) + a),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*e^(d*x + c) + a)/sqrt(-a))/(sqrt(-a)*d)
```

3.682 $\int \frac{1}{\sqrt{-a+be^{c+dx}}}\,dx$

Optimal. Leaf size=34

$$\frac{2\tan^{-1}\left(\frac{\sqrt{be^{c+dx}-a}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

```
[Out] (2*ArcTan[Sqrt[-a + b*E^(c + d*x)]/Sqrt[a]])/(Sqrt[a]*d)
```

Rubi [A] time = 0.0536442, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{2\tan^{-1}\left(\frac{\sqrt{be^{c+dx}-a}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In]  Int[1/Sqrt[-a + b*E^(c + d*x)],x]
```

```
[Out] (2*ArcTan[Sqrt[-a + b*E^(c + d*x)]/Sqrt[a]])/(Sqrt[a]*d)
```

Rubi in Sympy [A] time = 6.77617, size = 42, normalized size = 1.24

$$\frac{2e^{-c-dx}e^{c+dx}\operatorname{atan}\left(\frac{\sqrt{-a+be^{c+dx}}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] 2*exp(-c - d*x)*exp(c + d*x)*atan(sqrt(-a + b*exp(c + d*x))/sqrt(
a))/(sqrt(a)*d)
```

Mathematica [A] time = 0.0343188, size = 34, normalized size = 1.

$$\frac{2\tan^{-1}\left(\frac{\sqrt{be^{c+dx}-a}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/Sqrt[-a + b*E^(c + d*x)],x]
```

```
[Out] (2*ArcTan[Sqrt[-a + b*E^(c + d*x)]/Sqrt[a]])/(Sqrt[a]*d)
```

Maple [A] time = 0.011, size = 28, normalized size = 0.8

$$2\,\frac{1}{d\sqrt{a}}\arctan\left(\frac{\sqrt{-a+b{e^{dx+c}}}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-a+b*exp(d*x+c))^(1/2),x)
```

```
[Out] 2*arctan((-a+b*exp(d*x+c))^(1/2)/a^(1/2))/d/a^(1/2)
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*e^(d*x + c) - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.239753, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\left(\left(be^{(dx+c)} - 2\,a\right)\sqrt{-a} + 2\,\sqrt{be^{(dx+c)} - a}a\right)e^{(-dx-c)}\right)}{\sqrt{-a}d}, -\frac{2\,\arctan\left(\frac{\sqrt{a}}{\sqrt{be^{(dx+c)}-a}}\right)}{\sqrt{a}d}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*e^(d*x + c) - a),x, algorithm="fricas")
```

```
[Out] [log(((b*e^(d*x + c) - 2*a)*sqrt(-a) + 2*sqrt(b*e^(d*x + c) - a)*
a)*e^(-d*x - c))/(sqrt(-a)*d), -2*arctan(sqrt(a)/sqrt(b*e^(d*x +
c) - a))/(sqrt(a)*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-a + be^{c+dx}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/sqrt(-a + b*exp(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.228089, size = 36, normalized size = 1.06

$$\frac{2\,\arctan\left(\frac{\sqrt{be^{(dx+c)}-a}}{\sqrt{a}}\right)}{\sqrt{a}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*e^(d*x + c) - a),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*e^(d*x + c) - a)/sqrt(a))/(sqrt(a)*d)
```

3.683 $\int \sqrt{a+be^{c+dx}}\,dx$

Optimal. Leaf size=53

$$\frac{2\sqrt{a+be^{c+dx}}}{d}-\frac{2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{d}$$

```
[Out] (2*Sqrt[a + b*E^(c + d*x)])/d - (2*Sqrt[a]*ArcTanh[Sqrt[a + b*E^(
c + d*x)]/Sqrt[a]])/d
```

Rubi [A] time = 0.0720701, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{2\sqrt{a+be^{c+dx}}}{d}-\frac{2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*E^(c + d*x)],x]
```

```
[Out] (2*Sqrt[a + b*E^(c + d*x)])/d - (2*Sqrt[a]*ArcTanh[Sqrt[a + b*E^(
c + d*x)]/Sqrt[a]])/d
```

Rubi in Sympy [A] time = 9.17879, size = 75, normalized size = 1.42

$$-\frac{2\sqrt{a}e^{-c-dx}e^{c+dx}\operatorname{atanh}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)}{d}+\frac{2\sqrt{a+be^{c+dx}}e^{-c-dx}e^{c+dx}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] -2*sqrt(a)*exp(-c - d*x)*exp(c + d*x)*atanh(sqrt(a + b*exp(c + d*
x))/sqrt(a))/d + 2*sqrt(a + b*exp(c + d*x))*exp(-c - d*x)*exp(c +
 d*x)/d
```

Mathematica [A] time = 0.0336897, size = 50, normalized size = 0.94

$$\frac{2\left(\sqrt{a+be^{c+dx}}-\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{a+be^{c+dx}}}{\sqrt{a}}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*E^(c + d*x)],x]
```

```
[Out] (2*(Sqrt[a + b*E^(c + d*x)] - Sqrt[a]*ArcTanh[Sqrt[a + b*E^(c + d
*x)]/Sqrt[a]]))/d
```

Maple [A] time = 0.006, size = 42, normalized size = 0.8

$$\frac{1}{d}\left(2\sqrt{a+be^{dx+c}}-2\sqrt{a}Artanh\left(\frac{\sqrt{a+be^{dx+c}}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a+b*exp(d*x+c))^(1/2),x)
```

```
[Out] 1/d*(2*(a+b*exp(d*x+c))^(1/2)-2*a^(1/2)*arctanh((a+b*exp(d*x+c))^
(1/2)/a^(1/2)))
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*e^(d*x + c) + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.245709, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{a}\log\left(\left(be^{(dx+c)} - 2\sqrt{be^{(dx+c)} + a}\sqrt{a} + 2\,a\right)e^{(-dx-c)}\right) + 2\sqrt{be^{(dx+c)} + a}}{d}, -\frac{2\left(\sqrt{-a}\arctan\left(\frac{\sqrt{be^{(dx+c)}+a}}{\sqrt{-a}}\right) - \sqrt{be^{(dx+c)} + a}\right)}{d}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*e^(d*x + c) + a),x, algorithm="fricas")
```

```
[Out] [(sqrt(a)*log((b*e^(d*x + c) - 2*sqrt(b*e^(d*x + c) + a)*sqrt(a)
+ 2*a)*e^(-d*x - c)) + 2*sqrt(b*e^(d*x + c) + a))/d, -2*(sqrt(-a)
*arctan(sqrt(b*e^(d*x + c) + a)/sqrt(-a)) - sqrt(b*e^(d*x + c) +
a))/d]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a + be^{c+dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*exp(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.380663, size = 59, normalized size = 1.11

$$\frac{2\left(\frac{a\arctan\left(\frac{\sqrt{be^{(dx+c)}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} + \sqrt{be^{(dx+c)} + a}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*e^(d*x + c) + a),x, algorithm="giac")
```

```
[Out] 2*(a*arctan(sqrt(b*e^(d*x + c) + a)/sqrt(-a))/sqrt(-a) + sqrt(b*e
^(d*x + c) + a))/d
```

3.684 $\int \sqrt{-a+be^{c+dx}}\,dx$

Optimal. Leaf size=57

$$\frac{2\sqrt{be^{c+dx}-a}}{d}-\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{be^{c+dx}-a}}{\sqrt{a}}\right)}{d}$$

```
[Out] (2*Sqrt[-a + b*E^(c + d*x)])/d - (2*Sqrt[a]*ArcTan[Sqrt[-a + b*E^
(c + d*x)]/Sqrt[a]])/d
```

Rubi [A] time = 0.0758488, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{2\sqrt{be^{c+dx}-a}}{d}-\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{be^{c+dx}-a}}{\sqrt{a}}\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[-a + b*E^(c + d*x)],x]
```

```
[Out] (2*Sqrt[-a + b*E^(c + d*x)])/d - (2*Sqrt[a]*ArcTan[Sqrt[-a + b*E^
(c + d*x)]/Sqrt[a]])/d
```

Rubi in Sympy [A] time = 9.89564, size = 75, normalized size = 1.32

$$-\frac{2\sqrt{a}e^{-c-dx}e^{c+dx}\operatorname{atan}\left(\frac{\sqrt{-a+be^{c+dx}}}{\sqrt{a}}\right)}{d}+\frac{2\sqrt{-a+be^{c+dx}}e^{-c-dx}e^{c+dx}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] -2*sqrt(a)*exp(-c - d*x)*exp(c + d*x)*atan(sqrt(-a + b*exp(c + d*
x))/sqrt(a))/d + 2*sqrt(-a + b*exp(c + d*x))*exp(-c - d*x)*exp(c
+ d*x)/d
```

Mathematica [A] time = 0.0385192, size = 54, normalized size = 0.95

$$\frac{2\left(\sqrt{be^{c+dx}-a}-\sqrt{a}\tan^{-1}\left(\frac{\sqrt{be^{c+dx}-a}}{\sqrt{a}}\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[-a + b*E^(c + d*x)],x]
```

```
[Out] (2*(Sqrt[-a + b*E^(c + d*x)] - Sqrt[a]*ArcTan[Sqrt[-a + b*E^(c +
d*x)]/Sqrt[a]]))/d
```

Maple [A] time = 0.006, size = 48, normalized size = 0.8

$$-2\,{\frac{\sqrt{a}}{d}\arctan\left({\frac{\sqrt{-a+b{e^{dx+c}}}}{\sqrt{a}}}\right)}+2\,{\frac{\sqrt{-a+b{e^{dx+c}}}}{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-a+b*exp(d*x+c))^(1/2),x)
```

```
[Out] -2*arctan((-a+b*exp(d*x+c))^(1/2)/a^(1/2))*a^(1/2)/d+2*(-a+b*exp(
d*x+c))^(1/2)/d
```

Maxima [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*e^(d*x + c) - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.26014, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-a}\log\left(\left(be^{(dx+c)} - 2\sqrt{be^{(dx+c)} - a}\sqrt{-a} - 2a\right)e^{(-dx-c)}\right) + 2\sqrt{be^{(dx+c)} - a}}{d}, -\frac{2\left(\sqrt{a}\arctan\left(\frac{\sqrt{be^{(dx+c)}-a}}{\sqrt{a}}\right) - \sqrt{be^{(dx+c)} - a}\right)}{d}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*e^(d*x + c) - a),x, algorithm="fricas")
```

```
[Out] [(sqrt(-a)*log((b*e^(d*x + c) - 2*sqrt(b*e^(d*x + c) - a)*sqrt(-a
) - 2*a)*e^(-d*x - c)) + 2*sqrt(b*e^(d*x + c) - a))/d, -2*(sqrt(a
)*arctan(sqrt(b*e^(d*x + c) - a)/sqrt(a)) - sqrt(b*e^(d*x + c) -
a))/d]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-a + be^{c+dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-a+b*exp(d*x+c))**(1/2),x)
```

```
[Out] Integral(sqrt(-a + b*exp(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.317329, size = 61, normalized size = 1.07

$$-\frac{2\left(\sqrt{a}\arctan\left(\frac{\sqrt{be^{(dx+c)}-a}}{\sqrt{a}}\right) - \sqrt{be^{(dx+c)} - a}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*e^(d*x + c) - a),x, algorithm="giac")
```

```
[Out] -2*(sqrt(a)*arctan(sqrt(b*e^(d*x + c) - a)/sqrt(a)) - sqrt(b*e^(d
*x + c) - a))/d
```

3.685 $\int e^{6x}\sin(3x)\,dx$

Optimal. Leaf size=27

$$\frac{2}{15}e^{6x}\sin(3x)-\frac{1}{15}e^{6x}\cos(3x)$$

```
[Out] -(E^(6*x)*Cos[3*x])/15 + (2*E^(6*x)*Sin[3*x])/15
```

Rubi [A] time = 0.0199365, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{2}{15}e^{6x}\sin(3x)-\frac{1}{15}e^{6x}\cos(3x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(6*x)*Sin[3*x],x]

[Out] -(E^(6*x)*Cos[3*x])/15 + (2*E^(6*x)*Sin[3*x])/15
```

Rubi in Sympy [A] time = 2.633, size = 24, normalized size = 0.89

$$\frac{2e^{6x}\sin{(3x)}}{15}-\frac{e^{6x}\cos{(3x)}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(6*x)*sin(3*x),x)

[Out] 2*exp(6*x)*sin(3*x)/15 - exp(6*x)*cos(3*x)/15
```

Mathematica [A] time = 0.0147138, size = 20, normalized size = 0.74

$$-\frac{1}{15}e^{6x}(\cos(3x)-2\sin(3x))$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(6*x)*Sin[3*x],x]

[Out] -(E^(6*x)*(Cos[3*x] - 2*Sin[3*x]))/15
```

Maple [A] time = 0.007, size = 22, normalized size = 0.8

$$-\frac{e^{6x}\cos(3x)}{15}+\frac{2e^{6x}\sin(3x)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(6*x)*sin(3*x),x)
```

```
[Out] -1/15*exp(6*x)*cos(3*x)+2/15*exp(6*x)*sin(3*x)
```

Maxima [A] time = 0.760388, size = 23, normalized size = 0.85

$$-\frac{1}{15}\,(\cos(3\,x) - 2\,\sin(3\,x))e^{(6\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(e^(6*x)*sin(3*x),x, algorithm="maxima")
```

```
[Out] -1/15*(cos(3*x) - 2*sin(3*x))*e^(6*x)
```

Fricas [A] time = 0.261667, size = 28, normalized size = 1.04

$$-\frac{1}{15}\,\cos(3\,x)\,e^{(6\,x)} + \frac{2}{15}\,e^{(6\,x)}\sin(3\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(e^(6*x)*sin(3*x),x, algorithm="fricas")
```

```
[Out] -1/15*cos(3*x)*e^(6*x) + 2/15*e^(6*x)*sin(3*x)
```

Sympy [A] time = 0.32509, size = 24, normalized size = 0.89

$$\frac{2e^{6x}\sin(3x)}{15} - \frac{e^{6x}\cos(3x)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(6*x)*sin(3*x),x)
```

```
[Out] 2*exp(6*x)*sin(3*x)/15 - exp(6*x)*cos(3*x)/15
```

GIAC/XCAS [A] time = 0.237039, size = 23, normalized size = 0.85

$$-\frac{1}{15}\,(\cos(3\,x) - 2\,\sin(3\,x))e^{(6\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(e^(6*x)*sin(3*x),x, algorithm="giac")
```

```
[Out] -1/15*(cos(3*x) - 2*sin(3*x))*e^(6*x)
```

3.686 $\int \frac{e^{3x}}{1+e^{2x}}\,dx$

Optimal. Leaf size=10

$$e^x - \tan^{-1}(e^x)$$

```
[Out] E^x - ArcTan[E^x]
```

Rubi [A] time = 0.039652, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$e^x - \tan^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(3*x)/(1 + E^(2*x)),x]

[Out] E^x - ArcTan[E^x]
```

Rubi in Sympy [A] time = 7.6365, size = 7, normalized size = 0.7

$$e^x - \operatorname{atan}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(3*x)/(1+exp(2*x)),x)

[Out] exp(x) - atan(exp(x))
```

Mathematica [A] time = 0.00637822, size = 10, normalized size = 1.

$$e^x - \tan^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(3*x)/(1 + E^(2*x)),x]

[Out] E^x - ArcTan[E^x]
```

Maple [A] time = 0.005, size = 9, normalized size = 0.9

$$e^x - \arctan(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(3*x)/(1+exp(2*x)),x)

[Out] exp(x)-arctan(exp(x))
```

Maxima [A] time = 0.856133, size = 11, normalized size = 1.1

$$-\arctan\left(e^{x}\right)+e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/(e^(2*x) + 1),x, algorithm="maxima")
```

```
[Out] -arctan(e^x) + e^x
```

Fricas [A] time = 0.298067, size = 11, normalized size = 1.1

$$-\arctan\left(e^{x}\right)+e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/(e^(2*x) + 1),x, algorithm="fricas")
```

```
[Out] -arctan(e^x) + e^x
```

Sympy [A] time = 0.109671, size = 19, normalized size = 1.9

$$e^{x}+\operatorname{RootSum}\left(4z^{2}+1,\left(i\mapsto i\log\left(-2i+e^{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(3*x)/(1+exp(2*x)),x)
```

```
[Out] exp(x) + RootSum(4*_z**2 + 1, Lambda(_i, _i*log(-2*_i + exp(x))))
```

GIAC/XCAS [A] time = 0.242792, size = 11, normalized size = 1.1

$$-\arctan\left(e^{x}\right)+e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/(e^(2*x) + 1),x, algorithm="giac")
```

```
[Out] -arctan(e^x) + e^x
```

3.687 $\int \frac{e^{3x}}{-1+e^{2x}} dx$

Optimal. Leaf size=10

$$e^x - \tanh^{-1}(e^x)$$

```
[Out] E^x - ArcTanh[E^x]
```

Rubi [A] time = 0.0385919, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$e^x - \tanh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(3*x)/(-1 + E^(2*x)),x]

[Out] E^x - ArcTanh[E^x]
```

Rubi in Sympy [A] time = 7.76255, size = 7, normalized size = 0.7

$$e^x - \operatorname{atanh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(3*x)/(-1+exp(2*x)),x)

[Out] exp(x) - atanh(exp(x))
```

Mathematica [B] time = 0.0102683, size = 26, normalized size = 2.6

$$e^x + \frac{1}{2}\log(1-e^x) - \frac{1}{2}\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(3*x)/(-1 + E^(2*x)),x]

[Out] E^x + Log[1 - E^x]/2 - Log[1 + E^x]/2
```

Maple [B] time = 0.006, size = 18, normalized size = 1.8

$$e^x + \frac{\ln(-1+e^x)}{2} - \frac{\ln(1+e^x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(3*x)/(-1+exp(2*x)),x)

[Out] exp(x)+1/2*ln(-1+exp(x))-1/2*ln(1+exp(x))
```

Maxima [A] time = 0.76127, size = 23, normalized size = 2.3

$$e^{x} - \frac{1}{2} \log\left(e^{x} + 1\right) + \frac{1}{2} \log\left(e^{x} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/(e^(2*x) - 1),x, algorithm="maxima")

[Out] e^x - 1/2*log(e^x + 1) + 1/2*log(e^x - 1)
```

Fricas [A] time = 0.270585, size = 23, normalized size = 2.3

$$e^{x} - \frac{1}{2} \log\left(e^{x} + 1\right) + \frac{1}{2} \log\left(e^{x} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/(e^(2*x) - 1),x, algorithm="fricas")

[Out] e^x - 1/2*log(e^x + 1) + 1/2*log(e^x - 1)
```

Sympy [A] time = 0.104369, size = 19, normalized size = 1.9

$$e^{x} + \frac{\log\left(e^{x} - 1\right)}{2} - \frac{\log\left(e^{x} + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(3*x)/(-1+exp(2*x)),x)

[Out] exp(x) + log(exp(x) - 1)/2 - log(exp(x) + 1)/2
```

GIAC/XCAS [A] time = 0.221857, size = 24, normalized size = 2.4

$$e^{x} - \frac{1}{2} \ln\left(e^{x} + 1\right) + \frac{1}{2} \ln\left(|e^{x} - 1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/(e^(2*x) - 1),x, algorithm="giac")

[Out] e^x - 1/2*ln(e^x + 1) + 1/2*ln(abs(e^x - 1))
```

3.688 $\int \frac{e^{-x}}{\sqrt{1+e^{2x}}} dx$

Optimal. Leaf size=18

$$-e^{-x}\sqrt{e^{2x}+1}$$

```
[Out] -(Sqrt[1 + E^(2*x)]/E^x)
```

Rubi [A] time = 0.04164, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-e^{-x}\sqrt{e^{2x}+1}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(E^x*Sqrt[1 + E^(2*x)]),x]

[Out] -(Sqrt[1 + E^(2*x)]/E^x)
```

Rubi in Sympy [A] time = 5.56887, size = 14, normalized size = 0.78

$$-\sqrt{e^{2x}+1}e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/exp(x)/(1+exp(2*x))**(1/2),x)

[Out] -sqrt(exp(2*x) + 1)*exp(-x)
```

Mathematica [A] time = 0.0152462, size = 18, normalized size = 1.

$$-e^{-x}\sqrt{e^{2x}+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(E^x*Sqrt[1 + E^(2*x)]),x]

[Out] -(Sqrt[1 + E^(2*x)]/E^x)
```

Maple [A] time = 0.009, size = 15, normalized size = 0.8

$$-\frac{1}{e^x}\sqrt{1+(e^x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/exp(x)/(1+exp(2*x))^(1/2),x)

[Out] -1/exp(x)*(1+exp(x)^2)^(1/2)
```

Maxima [A] time = 0.763795, size = 19, normalized size = 1.06

$$-\sqrt{e^{(2x)}+1}e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/sqrt(e^(2*x) + 1),x, algorithm="maxima")
```

```
[Out] -sqrt(e^(2*x) + 1)*e^(-x)
```

Fricas [A] time = 0.236829, size = 14, normalized size = 0.78

$$-\sqrt{e^{(-2x)}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/sqrt(e^(2*x) + 1),x, algorithm="fricas")
```

```
[Out] -sqrt(e^(-2*x) + 1)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{-x}}{\sqrt{e^{2x}+1}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/exp(x)/(1+exp(2*x))**(1/2),x)
```

```
[Out] Integral(exp(-x)/sqrt(exp(2*x) + 1), x)
```

GIAC/XCAS [A] time = 0.233742, size = 28, normalized size = 1.56

$$\frac{2}{\left(\sqrt{e^{(2x)}+1}-e^{x}\right)^{2}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(-x)/sqrt(e^(2*x) + 1),x, algorithm="giac")
```

```
[Out] 2/((sqrt(e^(2*x) + 1) - e^x)^2 - 1)
```

3.689 $\int \frac{e^x}{-1-8e^x+e^{2x}}\,dx$

Optimal. Leaf size=20

$$\frac{\tanh^{-1}\left(\frac{4-e^x}{\sqrt{17}}\right)}{\sqrt{17}}$$

```
[Out] ArcTanh[(4 - E^x)/Sqrt[17]]/Sqrt[17]
```

Rubi [A] time = 0.0658125, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$\frac{\tanh^{-1}\left(\frac{4-e^x}{\sqrt{17}}\right)}{\sqrt{17}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x/(-1 - 8*E^x + E^(2*x)),x]

[Out] ArcTanh[(4 - E^x)/Sqrt[17]]/Sqrt[17]
```

Rubi in Sympy [A] time = 15.9802, size = 22, normalized size = 1.1

$$-\frac{\sqrt{17}\,\operatorname{atanh}\left(\sqrt{17}\left(\frac{e^x}{17}-\frac{4}{17}\right)\right)}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(-1-8*exp(x)+exp(2*x)),x)

[Out] -sqrt(17)*atanh(sqrt(17)*(exp(x)/17 - 4/17))/17
```

Mathematica [A] time = 0.0291338, size = 36, normalized size = 1.8

$$\frac{\log\left(-e^x+4+\sqrt{17}\right)-\log\left(e^x-4+\sqrt{17}\right)}{2\sqrt{17}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x/(-1 - 8*E^x + E^(2*x)),x]

[Out] (Log[4 + Sqrt[17] - E^x] - Log[-4 + Sqrt[17] + E^x])/(2*Sqrt[17])
```

Maple [A] time = 0.005, size = 18, normalized size = 0.9

$$-\frac{\sqrt{17}}{17}\mathit{Artanh}\left(\frac{(2\,e^x-8)\sqrt{17}}{34}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(-1-8*exp(x)+exp(2*x)),x)
```

```
[Out] -1/17*17^(1/2)*arctanh(1/34*(2*exp(x)-8)*17^(1/2))
```

Maxima [A] time = 0.885497, size = 35, normalized size = 1.75

$$\frac{1}{34}\sqrt{17}\log\left(-\frac{\sqrt{17}-e^{x}+4}{\sqrt{17}+e^{x}-4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 8*e^x - 1),x, algorithm="maxima")
```

```
[Out] 1/34*sqrt(17)*log(-(sqrt(17) - e^x + 4)/(sqrt(17) + e^x - 4))
```

Fricas [A] time = 0.243382, size = 63, normalized size = 3.15

$$\frac{1}{34}\sqrt{17}\log\left(-\frac{2\left(4\sqrt{17}+17\right)e^{x}-\sqrt{17}e^{(2x)}-33\sqrt{17}-136}{e^{(2x)}-8e^{x}-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 8*e^x - 1),x, algorithm="fricas")
```

```
[Out] 1/34*sqrt(17)*log(-(2*(4*sqrt(17) + 17)*e^x - sqrt(17)*e^(2*x) -
33*sqrt(17) - 136)/(e^(2*x) - 8*e^x - 1))
```

Sympy [A] time = 0.124389, size = 17, normalized size = 0.85

$$\operatorname{RootSum}\left(68z^{2}-1,\left(i\mapsto i\log\left(-34i+e^{x}-4\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(-1-8*exp(x)+exp(2*x)),x)
```

```
[Out] RootSum(68*_z**2 - 1, Lambda(_i, _i*log(-34*_i + exp(x) - 4)))
```

GIAC/XCAS [A] time = 0.320522, size = 45, normalized size = 2.25

$$\frac{1}{34}\sqrt{17}\ln\left(\frac{\left|-2\sqrt{17}+2e^{x}-8\right|}{\left|2\sqrt{17}+2e^{x}-8\right|}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(e^(2*x) - 8*e^x - 1),x, algorithm="giac")
```

```
[Out] 1/34*sqrt(17)*ln(abs(-2*sqrt(17) + 2*e^x - 8)/abs(2*sqrt(17) + 2*
e^x - 8))
```

3.690 $\int e^{7x}x^3\,dx$

Optimal. Leaf size=44

$$\frac{1}{7}e^{7x}x^3-\frac{3}{49}e^{7x}x^2+\frac{6}{343}e^{7x}x-\frac{6e^{7x}}{2401}$$

```
[Out] (-6*E^(7*x))/2401 + (6*E^(7*x)*x)/343 - (3*E^(7*x)*x^2)/49 + (E^(
7*x)*x^3)/7
```

Rubi [A] time = 0.051556, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$\frac{1}{7}e^{7x}x^3-\frac{3}{49}e^{7x}x^2+\frac{6}{343}e^{7x}x-\frac{6e^{7x}}{2401}$$

Antiderivative was successfully verified.

```
[In] Int[E^(7*x)*x^3,x]
```

```
[Out] (-6*E^(7*x))/2401 + (6*E^(7*x)*x)/343 - (3*E^(7*x)*x^2)/49 + (E^(
7*x)*x^3)/7
```

Rubi in Sympy [A] time = 5.63964, size = 39, normalized size = 0.89

$$\frac{x^3e^{7x}}{7}-\frac{3x^2e^{7x}}{49}+\frac{6xe^{7x}}{343}-\frac{6e^{7x}}{2401}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(7*x)*x**3,x)
```

```
[Out] x**3*exp(7*x)/7 - 3*x**2*exp(7*x)/49 + 6*x*exp(7*x)/343 - 6*exp(7
*x)/2401
```

Mathematica [A] time = 0.00440649, size = 24, normalized size = 0.55

$$\frac{e^{7x}\left(343x^3-147x^2+42x-6\right)}{2401}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(7*x)*x^3,x]
```

```
[Out] (E^(7*x)*(-6 + 42*x - 147*x^2 + 343*x^3))/2401
```

Maple [A] time = 0.003, size = 22, normalized size = 0.5

$$\frac{\left(343\,x^3-147\,x^2+42\,x-6\right)e^{7\,x}}{2401}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(7*x)*x^3,x)

[Out] 1/2401*(343*x^3-147*x^2+42*x-6)*exp(7*x)
```

Maxima [A] time = 0.778432, size = 28, normalized size = 0.64

$$\frac{1}{2401}\left(343\,x^3 - 147\,x^2 + 42\,x - 6\right)e^{(7\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(7*x),x, algorithm="maxima")

[Out] 1/2401*(343*x^3 - 147*x^2 + 42*x - 6)*e^(7*x)
```

Fricas [A] time = 0.224427, size = 28, normalized size = 0.64

$$\frac{1}{2401}\left(343\,x^3 - 147\,x^2 + 42\,x - 6\right)e^{(7\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(7*x),x, algorithm="fricas")

[Out] 1/2401*(343*x^3 - 147*x^2 + 42*x - 6)*e^(7*x)
```

Sympy [A] time = 0.066689, size = 20, normalized size = 0.45

$$\frac{\left(343x^3 - 147x^2 + 42x - 6\right)e^{7x}}{2401}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(7*x)*x**3,x)

[Out] (343*x**3 - 147*x**2 + 42*x - 6)*exp(7*x)/2401
```

GIAC/XCAS [A] time = 0.262382, size = 28, normalized size = 0.64

$$\frac{1}{2401}\left(343\,x^3 - 147\,x^2 + 42\,x - 6\right)e^{(7\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(7*x),x, algorithm="giac")

[Out] 1/2401*(343*x^3 - 147*x^2 + 42*x - 6)*e^(7*x)
```

3.691 $\int e^{8-2x}x^3\,dx$

Optimal. Leaf size=52

$$-\frac{1}{2}e^{8-2x}x^3-\frac{3}{4}e^{8-2x}x^2-\frac{3}{4}e^{8-2x}x-\frac{3}{8}e^{8-2x}$$

```
[Out] (-3*E^(8 - 2*x))/8 - (3*E^(8 - 2*x)*x)/4 - (3*E^(8 - 2*x)*x^2)/4
- (E^(8 - 2*x)*x^3)/2
```

Rubi [A] time = 0.0636571, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{1}{2}e^{8-2x}x^3-\frac{3}{4}e^{8-2x}x^2-\frac{3}{4}e^{8-2x}x-\frac{3}{8}e^{8-2x}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(8 - 2*x)*x^3,x]
```

```
[Out] (-3*E^(8 - 2*x))/8 - (3*E^(8 - 2*x)*x)/4 - (3*E^(8 - 2*x)*x^2)/4
- (E^(8 - 2*x)*x^3)/2
```

Rubi in Sympy [A] time = 6.24278, size = 48, normalized size = 0.92

$$-\frac{x^3e^{-2x+8}}{2}-\frac{3x^2e^{-2x+8}}{4}-\frac{3xe^{-2x+8}}{4}-\frac{3e^{-2x+8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(8-2*x)*x**3,x)
```

```
[Out] -x**3*exp(-2*x + 8)/2 - 3*x**2*exp(-2*x + 8)/4 - 3*x*exp(-2*x + 8
)/4 - 3*exp(-2*x + 8)/8
```

Mathematica [A] time = 0.00599616, size = 26, normalized size = 0.5

$$-\frac{1}{8}e^{8-2x}\left(4x^3+6x^2+6x+3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(8 - 2*x)*x^3,x]
```

```
[Out] -(E^(8 - 2*x)*(3 + 6*x + 6*x^2 + 4*x^3))/8
```

Maple [A] time = 0.005, size = 24, normalized size = 0.5

$$-\frac{\left(4x^3+6x^2+6x+3\right)e^{8-2x}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(8-2*x)*x^3,x)

[Out] -1/8*(4*x^3+6*x^2+6*x+3)*exp(8-2*x)
```

Maxima [A] time = 0.782621, size = 41, normalized size = 0.79

$$-\frac{1}{8}\left(4\,x^3e^8+6\,x^2e^8+6\,xe^8+3\,e^8\right)e^{(-2\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(-2*x + 8),x, algorithm="maxima")

[Out] -1/8*(4*x^3*e^8 + 6*x^2*e^8 + 6*x*e^8 + 3*e^8)*e^(-2*x)
```

Fricas [A] time = 0.226088, size = 31, normalized size = 0.6

$$-\frac{1}{8}\left(4\,x^3+6\,x^2+6\,x+3\right)e^{(-2\,x+8)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(-2*x + 8),x, algorithm="fricas")

[Out] -1/8*(4*x^3 + 6*x^2 + 6*x + 3)*e^(-2*x + 8)
```

Sympy [A] time = 0.069451, size = 24, normalized size = 0.46

$$\frac{\left(-4x^3-6x^2-6x-3\right)e^{-2x+8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(8-2*x)*x**3,x)

[Out] (-4*x**3 - 6*x**2 - 6*x - 3)*exp(-2*x + 8)/8
```

GIAC/XCAS [A] time = 0.232995, size = 31, normalized size = 0.6

$$-\frac{1}{8}\left(4\,x^3+6\,x^2+6\,x+3\right)e^{(-2\,x+8)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(-2*x + 8),x, algorithm="giac")

[Out] -1/8*(4*x^3 + 6*x^2 + 6*x + 3)*e^(-2*x + 8)
```

3.692 $\int e^x \sqrt{9-e^{2x}}\,dx$

Optimal. Leaf size=33

$$\frac{1}{2}e^x\sqrt{9-e^{2x}}+\frac{9}{2}\sin^{-1}\left(\frac{e^x}{3}\right)$$

```
[Out] (E^x*Sqrt[9 - E^(2*x)])/2 + (9*ArcSin[E^x/3])/2
```

Rubi [A] time = 0.0439058, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{2}e^x\sqrt{9-e^{2x}}+\frac{9}{2}\sin^{-1}\left(\frac{e^x}{3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*Sqrt[9 - E^(2*x)],x]

[Out] (E^x*Sqrt[9 - E^(2*x)])/2 + (9*ArcSin[E^x/3])/2
```

Rubi in Sympy [A] time = 5.97625, size = 24, normalized size = 0.73

$$\frac{\sqrt{-e^{2x}+9}e^x}{2}+\frac{9\,\mathrm{asin}\left(\frac{e^x}{3}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(9-exp(2*x))**(1/2),x)

[Out] sqrt(-exp(2*x) + 9)*exp(x)/2 + 9*asin(exp(x)/3)/2
```

Mathematica [A] time = 0.0219208, size = 33, normalized size = 1.

$$\frac{1}{2}e^x\sqrt{9-e^{2x}}+\frac{9}{2}\sin^{-1}\left(\frac{e^x}{3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*Sqrt[9 - E^(2*x)],x]

[Out] (E^x*Sqrt[9 - E^(2*x)])/2 + (9*ArcSin[E^x/3])/2
```

Maple [A] time = 0.01, size = 23, normalized size = 0.7

$$\frac{\mathrm{e}^x}{2}\sqrt{9-(\mathrm{e}^x)^2}+\frac{9}{2}\arcsin\left(\frac{\mathrm{e}^x}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(9-exp(2*x))^(1/2),x)
```

```
[Out] 1/2*exp(x)*(9-exp(x)^2)^(1/2)+9/2*arcsin(1/3*exp(x))
```

Maxima [A] time = 0.859182, size = 30, normalized size = 0.91

$$\frac{1}{2}\sqrt{-e^{(2x)}+9}e^{x}+\frac{9}{2}\arcsin\left(\frac{1}{3}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 9)*e^x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(-e^(2*x) + 9)*e^x + 9/2*arcsin(1/3*e^x)
```

Fricas [A] time = 0.238799, size = 124, normalized size = 3.76

$$-\frac{18\left(6\sqrt{-e^{(2x)}+9}+e^{(2x)}-18\right)\arctan\left(\left(\sqrt{-e^{(2x)}+9}-3\right)e^{(-x)}\right)-\left(e^{(3x)}-18e^{x}\right)\sqrt{-e^{(2x)}+9}+6e^{(3x)}-54e^{x}}{2\left(6\sqrt{-e^{(2x)}+9}+e^{(2x)}-18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 9)*e^x,x, algorithm="fricas")
```

```
[Out] -1/2*(18*(6*sqrt(-e^(2*x) + 9) + e^(2*x) - 18)*arctan((sqrt(-e^(2
*x) + 9) - 3)*e^(-x)) - (e^(3*x) - 18*e^x)*sqrt(-e^(2*x) + 9) + 6
*e^(3*x) - 54*e^x)/(6*sqrt(-e^(2*x) + 9) + e^(2*x) - 18)
```

Sympy [A] time = 1.58338, size = 29, normalized size = 0.88

$$\begin{cases}\frac{\sqrt{-e^{2x}+9}e^{x}}{2}+\frac{9\operatorname{asin}\left(\frac{e^{x}}{3}\right)}{2} & \text{for}\ e^{x}<\log(3)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(9-exp(2*x))**(1/2),x)
```

```
[Out] Piecewise((sqrt(-exp(2*x) + 9)*exp(x)/2 + 9*asin(exp(x)/3)/2, exp
(x) < log(3)))
```

GIAC/XCAS [A] time = 0.241794, size = 30, normalized size = 0.91

$$\frac{1}{2}\sqrt{-e^{(2x)}+9}e^{x}+\frac{9}{2}\arcsin\left(\frac{1}{3}e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 9)*e^x,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(-e^(2*x) + 9)*e^x + 9/2*arcsin(1/3*e^x)
```

3.693 $\int e^{6x}\sqrt{9-e^{2x}}\,dx$

Optimal. Leaf size=50

$$-\frac{1}{7}\left(9-e^{2x}\right)^{7/2}+\frac{18}{5}\left(9-e^{2x}\right)^{5/2}-27\left(9-e^{2x}\right)^{3/2}$$

```
[Out] -27*(9 - E^(2*x))^(3/2) + (18*(9 - E^(2*x))^(5/2))/5 - (9 - E^(2*
x))^(7/2)/7
```

Rubi [A] time = 0.0673519, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{1}{7}\left(9-e^{2x}\right)^{7/2}+\frac{18}{5}\left(9-e^{2x}\right)^{5/2}-27\left(9-e^{2x}\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(6*x)*Sqrt[9 - E^(2*x)],x]
```

```
[Out] -27*(9 - E^(2*x))^(3/2) + (18*(9 - E^(2*x))^(5/2))/5 - (9 - E^(2*
x))^(7/2)/7
```

Rubi in Sympy [A] time = 8.51445, size = 36, normalized size = 0.72

$$-\frac{\left(-e^{2x}+9\right)^{\frac{7}{2}}}{7}+\frac{18\left(-e^{2x}+9\right)^{\frac{5}{2}}}{5}-27\left(-e^{2x}+9\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(6*x)*(9-exp(2*x))**(1/2),x)
```

```
[Out] -(-exp(2*x) + 9)**(7/2)/7 + 18*(-exp(2*x) + 9)**(5/2)/5 - 27*(-ex
p(2*x) + 9)**(3/2)
```

Mathematica [A] time = 0.0165697, size = 40, normalized size = 0.8

$$\frac{1}{35}\sqrt{9-e^{2x}}\left(-108e^{2x}-9e^{4x}+5e^{6x}-1944\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(6*x)*Sqrt[9 - E^(2*x)],x]
```

```
[Out] (Sqrt[9 - E^(2*x)]*(-1944 - 108*E^(2*x) - 9*E^(4*x) + 5*E^(6*x)))
/35
```

Maple [A] time = 0.007, size = 46, normalized size = 0.9

$$-\frac{(e^x)^4}{7}\left(9-(e^x)^2\right)^{\frac{3}{2}}-\frac{36\,(e^x)^2}{35}\left(9-(e^x)^2\right)^{\frac{3}{2}}-\frac{216}{35}\left(9-(e^x)^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(6*x)*(9-exp(2*x))^(1/2),x)
```

```
[Out] -1/7*exp(x)^4*(9-exp(x)^2)^(3/2)-36/35*exp(x)^2*(9-exp(x)^2)^(3/2
)-216/35*(9-exp(x)^2)^(3/2)
```

Maxima [A] time = 0.771463, size = 50, normalized size = 1.

$$-\frac{1}{7}\left(-e^{(2x)}+9\right)^{\frac{7}{2}}+\frac{18}{5}\left(-e^{(2x)}+9\right)^{\frac{5}{2}}-27\left(-e^{(2x)}+9\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 9)*e^(6*x),x, algorithm="maxima")
```

```
[Out] -1/7*(-e^(2*x) + 9)^(7/2) + 18/5*(-e^(2*x) + 9)^(5/2) - 27*(-e^(2
*x) + 9)^(3/2)
```

Fricas [A] time = 0.243227, size = 43, normalized size = 0.86

$$\frac{1}{35}\left(5e^{(6x)}-9e^{(4x)}-108e^{(2x)}-1944\right)\sqrt{-e^{(2x)}+9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 9)*e^(6*x),x, algorithm="fricas")
```

```
[Out] 1/35*(5*e^(6*x) - 9*e^(4*x) - 108*e^(2*x) - 1944)*sqrt(-e^(2*x) +
 9)
```

Sympy [A] time = 4.26263, size = 41, normalized size = 0.82

$$\begin{cases}-\frac{\left(-e^{2x}+9\right)^{\frac{7}{2}}}{7}+\frac{18\left(-e^{2x}+9\right)^{\frac{5}{2}}}{5}-27\left(-e^{2x}+9\right)^{\frac{3}{2}} & \text{for}\ e^{x}<\log(3)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(6*x)*(9-exp(2*x))**(1/2),x)
```

```
[Out] Piecewise((-(-exp(2*x) + 9)**(7/2)/7 + 18*(-exp(2*x) + 9)**(5/2)/
5 - 27*(-exp(2*x) + 9)**(3/2), exp(x) < log(3)))
```

GIAC/XCAS [A] time = 0.235262, size = 72, normalized size = 1.44

$$\frac{1}{7}\left(e^{(2x)}-9\right)^{3}\sqrt{-e^{(2x)}+9}+\frac{18}{5}\left(e^{(2x)}-9\right)^{2}\sqrt{-e^{(2x)}+9}-27\left(-e^{(2x)}+9\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-e^(2*x) + 9)*e^(6*x),x, algorithm="giac")
```

```
[Out] 1/7*(e^(2*x) - 9)^3*sqrt(-e^(2*x) + 9) + 18/5*(e^(2*x) - 9)^2*sqr
t(-e^(2*x) + 9) - 27*(-e^(2*x) + 9)^(3/2)
```

3.694 $\int \frac{e^{6x}}{(9-e^x)^{5/2}} \, dx$

Optimal. Leaf size=81

$$\frac{2}{7}(9-e^x)^{7/2}-18(9-e^x)^{5/2}+540(9-e^x)^{3/2}-14580\sqrt{9-e^x}-\frac{65610}{\sqrt{9-e^x}}+\frac{39366}{(9-e^x)^{3/2}}$$

```
[Out] 39366/(9 - E^x)^(3/2) - 65610/Sqrt[9 - E^x] - 14580*Sqrt[9 - E^x]
 + 540*(9 - E^x)^(3/2) - 18*(9 - E^x)^(5/2) + (2*(9 - E^x)^(7/2))
/7
```

Rubi [A] time = 0.0819464, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2}{7}(9-e^x)^{7/2}-18(9-e^x)^{5/2}+540(9-e^x)^{3/2}-14580\sqrt{9-e^x}-\frac{65610}{\sqrt{9-e^x}}+\frac{39366}{(9-e^x)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(6*x)/(9 - E^x)^(5/2),x]
```

```
[Out] 39366/(9 - E^x)^(3/2) - 65610/Sqrt[9 - E^x] - 14580*Sqrt[9 - E^x]
 + 540*(9 - E^x)^(3/2) - 18*(9 - E^x)^(5/2) + (2*(9 - E^x)^(7/2))
/7
```

Rubi in Sympy [A] time = 11.1197, size = 61, normalized size = 0.75

$$\frac{2(-e^x+9)^{\frac{7}{2}}}{7}-18(-e^x+9)^{\frac{5}{2}}+540(-e^x+9)^{\frac{3}{2}}-14580\sqrt{-e^x+9}-\frac{65610}{\sqrt{-e^x+9}}+\frac{39366}{(-e^x+9)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(6*x)/(9-exp(x))**(5/2),x)
```

```
[Out] 2*(-exp(x) + 9)**(7/2)/7 - 18*(-exp(x) + 9)**(5/2) + 540*(-exp(x)
 + 9)**(3/2) - 14580*sqrt(-exp(x) + 9) - 65610/sqrt(-exp(x) + 9)
+ 39366/(-exp(x) + 9)**(3/2)
```

Mathematica [A] time = 0.0439276, size = 48, normalized size = 0.59

$$-\frac{2\left(-839808e^x+23328e^{2x}+432e^{3x}+18e^{4x}+e^{5x}+5038848\right)}{7(9-e^x)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(6*x)/(9 - E^x)^(5/2),x]
```

```
[Out] (-2*(5038848 - 839808*E^x + 23328*E^(2*x) + 432*E^(3*x) + 18*E^(4
*x) + E^(5*x)))/(7*(9 - E^x)^(3/2))
```

Maple [A] time = 0.014, size = 62, normalized size = 0.8

$$39366\,(9-e^x)^{-3/2}+540\,(9-e^x)^{3/2}-18\,(9-e^x)^{5/2}+\frac{2}{7}(9-e^x)^{\frac{7}{2}}-65610\,\frac{1}{\sqrt{9-e^x}}-14580\,\sqrt{9-e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(exp(6*x)/(9-exp(x))^(5/2),x)
```

```
[Out] 39366/(9-exp(x))^(3/2)+540*(9-exp(x))^(3/2)-18*(9-exp(x))^(5/2)+2
/7*(9-exp(x))^(7/2)-65610/(9-exp(x))^(1/2)-14580*(9-exp(x))^(1/2)
```

Maxima [A] time = 0.786708, size = 82, normalized size = 1.01

$$\frac{2}{7}\left(-e^{x}+9\right)^{\frac{7}{2}}-18\left(-e^{x}+9\right)^{\frac{5}{2}}+540\left(-e^{x}+9\right)^{\frac{3}{2}}-14580\sqrt{-e^{x}+9}-\frac{65610}{\sqrt{-e^{x}+9}}+\frac{39366}{\left(-e^{x}+9\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(6*x)/(-e^x + 9)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(-e^x + 9)^(7/2) - 18*(-e^x + 9)^(5/2) + 540*(-e^x + 9)^(3/2)
 - 14580*sqrt(-e^x + 9) - 65610/sqrt(-e^x + 9) + 39366/(-e^x + 9)
^(3/2)
```

Fricas [A] time = 0.23467, size = 59, normalized size = 0.73

$$\frac{2\left(e^{(5x)}+18e^{(4x)}+432e^{(3x)}+23328e^{(2x)}-839808e^{x}+5038848\right)}{7\left(e^{x}-9\right)\sqrt{-e^{x}+9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(6*x)/(-e^x + 9)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(e^(5*x) + 18*e^(4*x) + 432*e^(3*x) + 23328*e^(2*x) - 839808*
e^x + 5038848)/((e^x - 9)*sqrt(-e^x + 9))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{e^{6x}}{\left(-e^{x}+9\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(exp(6*x)/(9-exp(x))**(5/2),x)
```

```
[Out] Integral(exp(6*x)/(-exp(x) + 9)**(5/2), x)
```

GIAC/XCAS [A] time = 0.232066, size = 101, normalized size = 1.25

$$-\frac{2}{7}\left(e^{x}-9\right)^{3}\sqrt{-e^{x}+9}-18\left(e^{x}-9\right)^{2}\sqrt{-e^{x}+9}+540\left(-e^{x}+9\right)^{\frac{3}{2}}-14580\sqrt{-e^{x}+9}-\frac{13122\left(5e^{x}-42\right)}{\left(e^{x}-9\right)\sqrt{-e^{x}+9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(e^(6*x)/(-e^x + 9)^(5/2),x, algorithm="giac")
```

```
[Out] -2/7*(e^x - 9)^3*sqrt(-e^x + 9) - 18*(e^x - 9)^2*sqrt(-e^x + 9) +
 540*(-e^x + 9)^(3/2) - 14580*sqrt(-e^x + 9) - 13122*(5*e^x - 42)
/((e^x - 9)*sqrt(-e^x + 9))
```

3.695 $\int \left(2-7e^{x^4}\right)^5 x^3\,dx$

Optimal. Leaf size=55

$$8x^4-140e^{x^4}+490e^{2x^4}-\frac{3430e^{3x^4}}{3}+\frac{12005e^{4x^4}}{8}-\frac{16807e^{5x^4}}{20}$$

```
[Out] -140*E^x^4 + 490*E^(2*x^4) - (3430*E^(3*x^4))/3 + (12005*E^(4*x^4
))/8 - (16807*E^(5*x^4))/20 + 8*x^4
```

Rubi [A] time = 0.134567, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$8x^4-140e^{x^4}+490e^{2x^4}-\frac{3430e^{3x^4}}{3}+\frac{12005e^{4x^4}}{8}-\frac{16807e^{5x^4}}{20}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - 7*E^x^4)^5*x^3,x]
```

```
[Out] -140*E^x^4 + 490*E^(2*x^4) - (3430*E^(3*x^4))/3 + (12005*E^(4*x^4
))/8 - (16807*E^(5*x^4))/20 + 8*x^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{16807e^{5x^4}}{20}+\frac{12005e^{4x^4}}{8}-\frac{3430e^{3x^4}}{3}-140e^{x^4}+8\log\left(e^{x^4}\right)+980\int^{e^{x^4}} x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2-7*exp(x**4))**5*x**3,x)
```

```
[Out] -16807*exp(5*x**4)/20 + 12005*exp(4*x**4)/8 - 3430*exp(3*x**4)/3
- 140*exp(x**4) + 8*log(exp(x**4)) + 980*Integral(x, (x, exp(x**4
)))
```

Mathematica [A] time = 0.0155566, size = 55, normalized size = 1.

$$8x^4-140e^{x^4}+490e^{2x^4}-\frac{3430e^{3x^4}}{3}+\frac{12005e^{4x^4}}{8}-\frac{16807e^{5x^4}}{20}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - 7*E^x^4)^5*x^3,x]
```

```
[Out] -140*E^x^4 + 490*E^(2*x^4) - (3430*E^(3*x^4))/3 + (12005*E^(4*x^4
))/8 - (16807*E^(5*x^4))/20 + 8*x^4
```

Maple [A] time = 0.009, size = 47, normalized size = 0.9

$$-\frac{16807\left(e^{x^4}\right)^5}{20}+\frac{12005\left(e^{x^4}\right)^4}{8}-\frac{3430\left(e^{x^4}\right)^3}{3}+490\left(e^{x^4}\right)^2-140\,e^{x^4}+8\ln\left(e^{x^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((2-7*exp(x^4))^5*x^3,x)
```

```
[Out] -16807/20*exp(x^4)^5+12005/8*exp(x^4)^4-3430/3*exp(x^4)^3+490*exp
(x^4)^2-140*exp(x^4)+8*ln(exp(x^4))
```

Maxima [A]   time = 0.790476, size = 59, normalized size = 1.07

$$8\,x^4 - \frac{16807}{20}\,e^{\left(5\,x^4\right)} + \frac{12005}{8}\,e^{\left(4\,x^4\right)} - \frac{3430}{3}\,e^{\left(3\,x^4\right)} + 490\,e^{\left(2\,x^4\right)} - 140\,e^{\left(x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(-x^3*(7*e^(x^4) - 2)^5,x, algorithm="maxima")
```

```
[Out] 8*x^4 - 16807/20*e^(5*x^4) + 12005/8*e^(4*x^4) - 3430/3*e^(3*x^4)
 + 490*e^(2*x^4) - 140*e^(x^4)
```

Fricas [A]   time = 0.257185, size = 59, normalized size = 1.07

$$8\,x^4 - \frac{16807}{20}\,e^{\left(5\,x^4\right)} + \frac{12005}{8}\,e^{\left(4\,x^4\right)} - \frac{3430}{3}\,e^{\left(3\,x^4\right)} + 490\,e^{\left(2\,x^4\right)} - 140\,e^{\left(x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(-x^3*(7*e^(x^4) - 2)^5,x, algorithm="fricas")
```

```
[Out] 8*x^4 - 16807/20*e^(5*x^4) + 12005/8*e^(4*x^4) - 3430/3*e^(3*x^4)
 + 490*e^(2*x^4) - 140*e^(x^4)
```

Sympy [A]   time = 0.145718, size = 49, normalized size = 0.89

$$8x^4 - \frac{16807e^{5x^4}}{20} + \frac{12005e^{4x^4}}{8} - \frac{3430e^{3x^4}}{3} + 490e^{2x^4} - 140e^{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate((2-7*exp(x**4))**5*x**3,x)
```

```
[Out] 8*x**4 - 16807*exp(5*x**4)/20 + 12005*exp(4*x**4)/8 - 3430*exp(3*
x**4)/3 + 490*exp(2*x**4) - 140*exp(x**4)
```

GIAC/XCAS [A]   time = 0.242893, size = 59, normalized size = 1.07

$$8\,x^4 - \frac{16807}{20}\,e^{\left(5\,x^4\right)} + \frac{12005}{8}\,e^{\left(4\,x^4\right)} - \frac{3430}{3}\,e^{\left(3\,x^4\right)} + 490\,e^{\left(2\,x^4\right)} - 140\,e^{\left(x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(-x^3*(7*e^(x^4) - 2)^5,x, algorithm="giac")
```

```
[Out] 8*x^4 - 16807/20*e^(5*x^4) + 12005/8*e^(4*x^4) - 3430/3*e^(3*x^4)
 + 490*e^(2*x^4) - 140*e^(x^4)
```

3.696 $\int e^{x^2}\sqrt{1-e^{2x^2}}x\,dx$

Optimal. Leaf size=35

$$\frac{1}{4}e^{x^2}\sqrt{1-e^{2x^2}}+\frac{1}{4}\sin^{-1}\left(e^{x^2}\right)$$

```
[Out] (E^x^2*Sqrt[1 - E^(2*x^2)])/4 + ArcSin[E^x^2]/4
```

Rubi [A] time = 0.25038, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{1}{4}e^{x^2}\sqrt{1-e^{2x^2}}+\frac{1}{4}\sin^{-1}\left(e^{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^x^2*Sqrt[1 - E^(2*x^2)]*x,x]

[Out] (E^x^2*Sqrt[1 - E^(2*x^2)])/4 + ArcSin[E^x^2]/4
```

Rubi in Sympy [A] time = 18.2952, size = 26, normalized size = 0.74

$$\frac{\sqrt{-e^{2x^2}+1}e^{x^2}}{4}+\frac{\operatorname{asin}\left(e^{x^2}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**2)*x*(1-exp(2*x**2))**(1/2),x)

[Out] sqrt(-exp(2*x**2) + 1)*exp(x**2)/4 + asin(exp(x**2))/4
```

Mathematica [A] time = 0.0268219, size = 32, normalized size = 0.91

$$\frac{1}{4}\left(e^{x^2}\sqrt{1-e^{2x^2}}+\sin^{-1}\left(e^{x^2}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^2*Sqrt[1 - E^(2*x^2)]*x,x]

[Out] (E^x^2*Sqrt[1 - E^(2*x^2)] + ArcSin[E^x^2])/4
```

Maple [A] time = 0.006, size = 27, normalized size = 0.8

$$\frac{e^{x^2}}{4}\sqrt{1-\left(e^{x^2}\right)^2}+\frac{\arcsin\left(e^{x^2}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^2)*x*(1-exp(2*x^2))^(1/2),x)
```

```
[Out] 1/4*exp(x^2)*(1-exp(x^2)^2)^(1/2)+1/4*arcsin(exp(x^2))
```

Maxima [A] time = 0.870576, size = 35, normalized size = 1.

$$\frac{1}{4}\sqrt{-e^{(2x^2)}+1}e^{(x^2)}+\frac{1}{4}\arcsin\left(e^{(x^2)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*sqrt(-e^(2*x^2) + 1)*e^(x^2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(-e^(2*x^2) + 1)*e^(x^2) + 1/4*arcsin(e^(x^2))
```

Fricas [A] time = 0.274803, size = 154, normalized size = 4.4

$$-\frac{2\left(2\sqrt{-e^{(2x^2)}+1}+e^{(2x^2)}-2\right)\arctan\left(\left(\sqrt{-e^{(2x^2)}+1}-1\right)e^{(-x^2)}\right)-\left(e^{(3x^2)}-2e^{(x^2)}\right)\sqrt{-e^{(2x^2)}+1}+2e^{(3x^2)}-2e^{(x^2)}}{4\left(2\sqrt{-e^{(2x^2)}+1}+e^{(2x^2)}-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*sqrt(-e^(2*x^2) + 1)*e^(x^2),x, algorithm="fricas")
```

```
[Out] -1/4*(2*(2*sqrt(-e^(2*x^2) + 1) + e^(2*x^2) - 2)*arctan((sqrt(-e^
(2*x^2) + 1) - 1)*e^(-x^2)) - (e^(3*x^2) - 2*e^(x^2))*sqrt(-e^(2*
x^2) + 1) + 2*e^(3*x^2) - 2*e^(x^2))/(2*sqrt(-e^(2*x^2) + 1) + e^
(2*x^2) - 2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**2)*x*(1-exp(2*x**2))**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.232362, size = 35, normalized size = 1.

$$\frac{1}{4}\sqrt{-e^{(2x^2)}+1}e^{(x^2)}+\frac{1}{4}\arcsin\left(e^{(x^2)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*sqrt(-e^(2*x^2) + 1)*e^(x^2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(-e^(2*x^2) + 1)*e^(x^2) + 1/4*arcsin(e^(x^2))
```

3.697 $\int e^{x^3}\left(1-e^{4x^3}\right)^2 x^2\,dx$

Optimal. Leaf size=32

$$\frac{e^{x^3}}{3}-\frac{2e^{5x^3}}{15}+\frac{e^{9x^3}}{27}$$

```
[Out] E^x^3/3 - (2*E^(5*x^3))/15 + E^(9*x^3)/27
```

Rubi [A] time = 0.313358, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{e^{x^3}}{3}-\frac{2e^{5x^3}}{15}+\frac{e^{9x^3}}{27}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x^3*(1 - E^(4*x^3))^2*x^2,x]

[Out] E^x^3/3 - (2*E^(5*x^3))/15 + E^(9*x^3)/27
```

Rubi in Sympy [A] time = 24.2983, size = 24, normalized size = 0.75

$$\frac{e^{9x^3}}{27}-\frac{2e^{5x^3}}{15}+\frac{e^{x^3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**3)*(1-exp(4*x**3))**2*x**2,x)

[Out] exp(9*x**3)/27 - 2*exp(5*x**3)/15 + exp(x**3)/3
```

Mathematica [A] time = 0.0115799, size = 29, normalized size = 0.91

$$\frac{1}{135}e^{x^3}\left(-18e^{4x^3}+5e^{8x^3}+45\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^3*(1 - E^(4*x^3))^2*x^2,x]

[Out] (E^x^3*(45 - 18*E^(4*x^3) + 5*E^(8*x^3)))/135
```

Maple [A] time = 0.006, size = 24, normalized size = 0.8

$$\frac{\left(e^{x^3}\right)^9}{27}-\frac{2\left(e^{x^3}\right)^5}{15}+\frac{e^{x^3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^3)*(1-exp(4*x^3))^2*x^2,x)
```

```
[Out] 1/27*exp(x^3)^9-2/15*exp(x^3)^5+1/3*exp(x^3)
```

Maxima [A] time = 0.745612, size = 31, normalized size = 0.97

$$\frac{1}{27} e^{\left(9 x^{3}\right)} - \frac{2}{15} e^{\left(5 x^{3}\right)} + \frac{1}{3} e^{\left(x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*(e^(4*x^3) - 1)^2*e^(x^3),x, algorithm="maxima")
```

```
[Out] 1/27*e^(9*x^3) - 2/15*e^(5*x^3) + 1/3*e^(x^3)
```

Fricas [A] time = 0.245255, size = 31, normalized size = 0.97

$$\frac{1}{27} e^{\left(9 x^{3}\right)} - \frac{2}{15} e^{\left(5 x^{3}\right)} + \frac{1}{3} e^{\left(x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*(e^(4*x^3) - 1)^2*e^(x^3),x, algorithm="fricas")
```

```
[Out] 1/27*e^(9*x^3) - 2/15*e^(5*x^3) + 1/3*e^(x^3)
```

Sympy [A] time = 0.149063, size = 24, normalized size = 0.75

$$\frac{e^{9x^{3}}}{27} - \frac{2e^{5x^{3}}}{15} + \frac{e^{x^{3}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**3)*(1-exp(4*x**3))**2*x**2,x)
```

```
[Out] exp(9*x**3)/27 - 2*exp(5*x**3)/15 + exp(x**3)/3
```

GIAC/XCAS [A] time = 0.234842, size = 31, normalized size = 0.97

$$\frac{1}{27} e^{\left(9 x^{3}\right)} - \frac{2}{15} e^{\left(5 x^{3}\right)} + \frac{1}{3} e^{\left(x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*(e^(4*x^3) - 1)^2*e^(x^3),x, algorithm="giac")
```

```
[Out] 1/27*e^(9*x^3) - 2/15*e^(5*x^3) + 1/3*e^(x^3)
```

3.698 $\int e^{e^x+x}\,dx$

Optimal. Leaf size=5

$$e^{e^x}$$

```
[Out] E^E^x
```

Rubi [A] time = 0.00940718, antiderivative size = 5, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286

$$e^{e^x}$$

Antiderivative was successfully verified.

```
[In] Int[E^(E^x + x),x]
```

```
[Out] E^E^x
```

Rubi in Sympy [A] time = 3.82638, size = 3, normalized size = 0.6

$$e^{e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(exp(x)+x),x)
```

```
[Out] exp(exp(x))
```

Mathematica [A] time = 0.00299408, size = 5, normalized size = 1.

$$e^{e^x}$$

Antiderivative was successfully verified.

```
[In] Integrate[E^(E^x + x),x]
```

```
[Out] E^E^x
```

Maple [A] time = 0.003, size = 4, normalized size = 0.8

$$e^{e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(exp(x)+x),x)
```

```
[Out] exp(exp(x))
```

Maxima [A] time = 0.769145, size = 4, normalized size = 0.8

$$e^{(e^x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x + e^x),x, algorithm="maxima")
```

```
[Out] e^(e^x)
```

Fricas [A] time = 0.26369, size = 4, normalized size = 0.8

$$e^{(e^x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x + e^x),x, algorithm="fricas")
```

```
[Out] e^(e^x)
```

Sympy [A] time = 0.569223, size = 3, normalized size = 0.6

$$e^{e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(exp(x)+x),x)
```

```
[Out] exp(exp(x))
```

GIAC/XCAS [A] time = 0.228438, size = 4, normalized size = 0.8

$$e^{(e^x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x + e^x),x, algorithm="giac")
```

```
[Out] e^(e^x)
```

3.699 $\int e^{e^{e^x}+e^x+x}\,dx$

Optimal. Leaf size=7

$$e^{e^{e^x}}$$

```
[Out] E^E^E^x
```

Rubi [A] time = 0.0238931, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167

$$e^{e^{e^x}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(E^E^x + E^x + x),x]

[Out] E^E^E^x
```

Rubi in Sympy [A] time = 4.94008, size = 5, normalized size = 0.71

$$e^{e^{e^x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(exp(exp(x))+exp(x)+x),x)

[Out] exp(exp(exp(x)))
```

Mathematica [A] time = 0.00659325, size = 7, normalized size = 1.

$$e^{e^{e^x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(E^E^x + E^x + x),x]

[Out] E^E^E^x
```

Maple [A] time = 0.003, size = 5, normalized size = 0.7

$$e^{e^{e^x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(exp(exp(x))+exp(x)+x),x)

[Out] exp(exp(exp(x)))
```

Maxima [A] time = 0.817295, size = 5, normalized size = 0.71

$$e^{\left(e^{\left(e^x\right)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x + e^x + e^(e^x)),x, algorithm="maxima")
```

```
[Out] e^(e^(e^x))
```

Fricas [A] time = 0.236091, size = 5, normalized size = 0.71

$$e^{\left(e^{\left(e^x\right)}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x + e^x + e^(e^x)),x, algorithm="fricas")
```

```
[Out] e^(e^(e^x))
```

Sympy [A] time = 1.00205, size = 5, normalized size = 0.71

$$e^{e^{e^x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(exp(exp(x))+exp(x)+x),x)
```

```
[Out] exp(exp(exp(x)))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(x+e^x+e^{\left(e^x\right)}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x + e^x + e^(e^x)),x, algorithm="giac")
```

```
[Out] integrate(e^(x + e^x + e^(e^x)), x)
```

3.700 $\int (e^{-x}+e^x)^2\,dx$

Optimal. Leaf size=22

$$2x-\frac{e^{-2x}}{2}+\frac{e^{2x}}{2}$$

```
[Out] -1/(2*E^(2*x)) + E^(2*x)/2 + 2*x
```

Rubi [A] time = 0.036824, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$2x-\frac{e^{-2x}}{2}+\frac{e^{2x}}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(-x) + E^x)^2,x]

[Out] -1/(2*E^(2*x)) + E^(2*x)/2 + 2*x
```

Rubi in Sympy [A] time = 5.88473, size = 20, normalized size = 0.91

$$\frac{e^{2x}}{2}+\log\left(e^{2x}\right)-\frac{e^{-2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((exp(-x)+exp(x))**2,x)

[Out] exp(2*x)/2 + log(exp(2*x)) - exp(-2*x)/2
```

Mathematica [A] time = 0.0137519, size = 20, normalized size = 0.91

$$\frac{1}{2}\left(4x-e^{-2x}+e^{2x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(-x) + E^x)^2,x]

[Out] (-E^(-2*x) + E^(2*x) + 4*x)/2
```

Maple [A] time = 0.004, size = 17, normalized size = 0.8

$$2\,x-\frac{1}{2\,(e^x)^2}+\frac{(e^x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((exp(-x)+exp(x))^2,x)
```

```
[Out] 2*x-1/2/exp(x)^2+1/2*exp(x)^2
```

Maxima [A] time = 0.771814, size = 22, normalized size = 1.

$$2x + \frac{1}{2}e^{(2x)} - \frac{1}{2}e^{(-2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) + e^x)^2,x, algorithm="maxima")
```

```
[Out] 2*x + 1/2*e^(2*x) - 1/2*e^(-2*x)
```

Fricas [A] time = 0.254456, size = 26, normalized size = 1.18

$$\frac{1}{2}\left(4xe^{(2x)} + e^{(4x)} - 1\right)e^{(-2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) + e^x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(4*x*e^(2*x) + e^(4*x) - 1)*e^(-2*x)
```

Sympy [A] time = 0.0919, size = 17, normalized size = 0.77

$$2x + \frac{e^{2x}}{2} - \frac{e^{-2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((exp(-x)+exp(x))**2,x)
```

```
[Out] 2*x + exp(2*x)/2 - exp(-2*x)/2
```

GIAC/XCAS [A] time = 0.228337, size = 32, normalized size = 1.45

$$-\frac{1}{2}\left(2e^{(2x)} + 1\right)e^{(-2x)} + 2x + \frac{1}{2}e^{(2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) + e^x)^2,x, algorithm="giac")
```

```
[Out] -1/2*(2*e^(2*x) + 1)*e^(-2*x) + 2*x + 1/2*e^(2*x)
```

3.701 $\int \frac{1}{e^{-x}+e^x} dx$

Optimal. Leaf size=4

$$\tan^{-1}(e^x)$$

```
[Out] ArcTan[E^x]
```

Rubi [A] time = 0.0171728, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\tan^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(-x) + E^x)^(-1),x]

[Out] ArcTan[E^x]
```

Rubi in Sympy [A] time = 6.33744, size = 7, normalized size = 1.75

$$-\operatorname{atan}(e^{-x})$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(exp(-x)+exp(x)),x)

[Out] -atan(exp(-x))
```

Mathematica [A] time = 0.00479911, size = 4, normalized size = 1.

$$\tan^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(-x) + E^x)^(-1),x]

[Out] ArcTan[E^x]
```

Maple [A] time = 0.004, size = 4, normalized size = 1.

$$\arctan(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(exp(-x)+exp(x)),x)

[Out] arctan(exp(x))
```

Maxima [A] time = 0.851387, size = 9, normalized size = 2.25

$$-\arctan\left(e^{(-x)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(-x) + e^x),x, algorithm="maxima")

[Out] -arctan(e^(-x))
```

Fricas [A] time = 0.241353, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(-x) + e^x),x, algorithm="fricas")

[Out] arctan(e^x)
```

Sympy [A] time = 0.092894, size = 15, normalized size = 3.75

$$\operatorname{RootSum}\left(4z^{2} + 1, \left(i \mapsto i\log\left(2i + e^{x}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(exp(-x)+exp(x)),x)

[Out] RootSum(4*_z**2 + 1, Lambda(_i, _i*log(2*_i + exp(x))))
```

GIAC/XCAS [A] time = 0.240204, size = 4, normalized size = 1.

$$\arctan\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(-x) + e^x),x, algorithm="giac")

[Out] arctan(e^x)
```

3.702 $\int \frac{1}{(e^{-x}+e^x)^2} dx$

Optimal. Leaf size=13

$$-\frac{1}{2(e^{2x}+1)}$$

```
[Out] -1/(2*(1 + E^(2*x)))
```

Rubi [A] time = 0.0214213, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{1}{2(e^{2x}+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^(-x) + E^x)^(-2),x]

[Out] -1/(2*(1 + E^(2*x)))
```

Rubi in Sympy [A] time = 6.34755, size = 8, normalized size = 0.62

$$\frac{1}{2(1+e^{-2x})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(exp(-x)+exp(x))**2,x)

[Out] 1/(2*(1 + exp(-2*x)))
```

Mathematica [A] time = 0.00553155, size = 13, normalized size = 1.

$$-\frac{1}{2e^{2x}+2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^(-x) + E^x)^(-2),x]

[Out] -(2 + 2*E^(2*x))^(-1)
```

Maple [A] time = 0.004, size = 11, normalized size = 0.9

$$-\frac{1}{2+2(e^x)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(exp(-x)+exp(x))^2,x)
```

```
[Out] -1/2/(1+exp(x)^2)
```

Maxima [A] time = 0.781067, size = 14, normalized size = 1.08

$$\frac{1}{2\left(e^{(-2x)}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) + e^x)^(-2),x, algorithm="maxima")

[Out] 1/2/(e^(-2*x) + 1)
```

Fricas [A] time = 0.243763, size = 14, normalized size = 1.08

$$-\frac{1}{2\left(e^{(2x)}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) + e^x)^(-2),x, algorithm="fricas")

[Out] -1/2/(e^(2*x) + 1)
```

Sympy [A] time = 0.050422, size = 10, normalized size = 0.77

$$-\frac{1}{2e^{2x}+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(exp(-x)+exp(x))**2,x)

[Out] -1/(2*exp(2*x) + 2)
```

GIAC/XCAS [A] time = 0.235094, size = 14, normalized size = 1.08

$$-\frac{1}{2\left(e^{(2x)}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) + e^x)^(-2),x, algorithm="giac")

[Out] -1/2/(e^(2*x) + 1)
```

3.703 $\int \frac{1}{-e^{-x}+e^x} \, dx$

Optimal. Leaf size=6

$$-\tanh^{-1}(e^x)$$

```
[Out] -ArcTanh[E^x]
```

Rubi [A] time = 0.0180253, antiderivative size = 6, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\tanh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[(-E^(-x) + E^x)^(-1),x]

[Out] -ArcTanh[E^x]
```

Rubi in Sympy [A] time = 8.56262, size = 7, normalized size = 1.17

$$-\operatorname{atanh}(e^{-x})$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-1/exp(x)+exp(x)),x)

[Out] -atanh(exp(-x))
```

Mathematica [B] time = 0.00504197, size = 23, normalized size = 3.83

$$\frac{1}{2}\log(1-e^x) - \frac{1}{2}\log(e^x+1)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-E^(-x) + E^x)^(-1),x]

[Out] Log[1 - E^x]/2 - Log[1 + E^x]/2
```

Maple [A] time = 0.003, size = 6, normalized size = 1.

$$-\mathit{Artanh}(e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-1/exp(x)+exp(x)),x)

[Out] -arctanh(exp(x))
```

Maximia [A] time = 0.835852, size = 26, normalized size = 4.33

$$-\frac{1}{2}\log\left(e^{(-x)}+1\right)+\frac{1}{2}\log\left(e^{(-x)}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^(-x) - e^x),x, algorithm="maxima")
```

```
[Out] -1/2*log(e^(-x) + 1) + 1/2*log(e^(-x) - 1)
```

Fricas [A] time = 0.254351, size = 20, normalized size = 3.33

$$-\frac{1}{2}\log\left(e^{x}+1\right)+\frac{1}{2}\log\left(e^{x}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^(-x) - e^x),x, algorithm="fricas")
```

```
[Out] -1/2*log(e^x + 1) + 1/2*log(e^x - 1)
```

Sympy [A] time = 0.090759, size = 15, normalized size = 2.5

$$\frac{\log\left(e^{x}-1\right)}{2}-\frac{\log\left(e^{x}+1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-1/exp(x)+exp(x)),x)
```

```
[Out] log(exp(x) - 1)/2 - log(exp(x) + 1)/2
```

GIAC/XCAS [A] time = 0.235876, size = 22, normalized size = 3.67

$$-\frac{1}{2}\ln\left(e^{x}+1\right)+\frac{1}{2}\ln\left(|e^{x}-1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(e^(-x) - e^x),x, algorithm="giac")
```

```
[Out] -1/2*ln(e^x + 1) + 1/2*ln(abs(e^x - 1))
```

3.704 $\int \frac{1}{(-e^{-x}+e^x)^2} dx$

Optimal. Leaf size=15

$$\frac{1}{2(1-e^{2x})}$$

```
[Out] 1/(2*(1 - E^(2*x)))
```

Rubi [A] time = 0.0261727, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{1}{2(1-e^{2x})}$$

Antiderivative was successfully verified.

```
[In]  Int[(-E^(-x) + E^x)^(-2),x]

[Out] 1/(2*(1 - E^(2*x)))
```

Rubi in Sympy [A] time = 7.19965, size = 10, normalized size = 0.67

$$-\frac{1}{2(1-e^{-2x})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-1/exp(x)+exp(x))**2,x)

[Out] -1/(2*(1 - exp(-2*x)))
```

Mathematica [A] time = 0.0102263, size = 11, normalized size = 0.73

$$\frac{1}{2-2e^{2x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-E^(-x) + E^x)^(-2),x]

[Out] (2 - 2*E^(2*x))^(-1)
```

Maple [A] time = 0.002, size = 11, normalized size = 0.7

$$-\frac{1}{2(e^x)^2-2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-1/exp(x)+exp(x))^2,x)
```

```
[Out] -1/2/(exp(x)^2-1)
```

Maxima [A] time = 0.790278, size = 14, normalized size = 0.93

$$\frac{1}{2\left(e^{(-2x)}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) - e^x)^(-2),x, algorithm="maxima")
```

```
[Out] 1/2/(e^(-2*x) - 1)
```

Fricas [A] time = 0.258211, size = 14, normalized size = 0.93

$$-\frac{1}{2\left(e^{(2x)}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) - e^x)^(-2),x, algorithm="fricas")
```

```
[Out] -1/2/(e^(2*x) - 1)
```

Sympy [A] time = 0.052756, size = 10, normalized size = 0.67

$$-\frac{1}{2e^{2x}-2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-1/exp(x)+exp(x))**2,x)
```

```
[Out] -1/(2*exp(2*x) - 2)
```

GIAC/XCAS [A] time = 0.234021, size = 14, normalized size = 0.93

$$-\frac{1}{2\left(e^{(2x)}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) - e^x)^(-2),x, algorithm="giac")
```

```
[Out] -1/2/(e^(2*x) - 1)
```

3.705 $\int e^x (-e^{-x} + e^x)^2 \, dx$

Optimal. Leaf size=22

$$-e^{-x} - 2e^x + \frac{e^{3x}}{3}$$

```
[Out] -E^(-x) - 2*E^x + E^(3*x)/3
```

Rubi [A] time = 0.0461803, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$-e^{-x} - 2e^x + \frac{e^{3x}}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*(-E^(-x) + E^x)^2,x]

[Out] -E^(-x) - 2*E^x + E^(3*x)/3
```

Rubi in Sympy [A] time = 14.5517, size = 15, normalized size = 0.68

$$\frac{e^{3x}}{3} - 2e^x - e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(-1/exp(x)+exp(x))**2,x)

[Out] exp(3*x)/3 - 2*exp(x) - exp(-x)
```

Mathematica [A] time = 0.00934958, size = 22, normalized size = 1.

$$-e^{-x} - 2e^x + \frac{e^{3x}}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*(-E^(-x) + E^x)^2,x]

[Out] -E^(-x) - 2*E^x + E^(3*x)/3
```

Maple [A] time = 0.006, size = 18, normalized size = 0.8

$$\frac{(e^x)^3}{3} - 2\,e^x - (e^x)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(-1/exp(x)+exp(x))^2,x)
```

```
[Out] 1/3*exp(x)^3-2*exp(x)-1/exp(x)
```

Maxima [A] time = 0.775132, size = 28, normalized size = 1.27

$$-\frac{1}{3}\left(6\,e^{(-2\,x)}-1\right)e^{(3\,x)}-e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) - e^x)^2*e^x,x, algorithm="maxima")
```

```
[Out] -1/3*(6*e^(-2*x) - 1)*e^(3*x) - e^(-x)
```

Fricas [A] time = 0.236467, size = 24, normalized size = 1.09

$$\frac{1}{3}\left(e^{(4\,x)}-6\,e^{(2\,x)}-3\right)e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) - e^x)^2*e^x,x, algorithm="fricas")
```

```
[Out] 1/3*(e^(4*x) - 6*e^(2*x) - 3)*e^(-x)
```

Sympy [A] time = 0.109789, size = 15, normalized size = 0.68

$$\frac{e^{3x}}{3}-2e^{x}-e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(-1/exp(x)+exp(x))**2,x)
```

```
[Out] exp(3*x)/3 - 2*exp(x) - exp(-x)
```

GIAC/XCAS [A] time = 0.224113, size = 23, normalized size = 1.05

$$\frac{1}{3}\,e^{(3\,x)}-e^{(-x)}-2\,e^{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^(-x) - e^x)^2*e^x,x, algorithm="giac")
```

```
[Out] 1/3*e^(3*x) - e^(-x) - 2*e^x
```

3.706 $\int e^x \left(-e^{-x}+e^x\right)^3 \, dx$

Optimal. Leaf size=31

$$3x+\frac{e^{-2x}}{2}-\frac{3e^{2x}}{2}+\frac{e^{4x}}{4}$$

```
[Out] 1/(2*E^(2*x)) - (3*E^(2*x))/2 + E^(4*x)/4 + 3*x
```

Rubi [A] time = 0.0646935, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$3x+\frac{e^{-2x}}{2}-\frac{3e^{2x}}{2}+\frac{e^{4x}}{4}$$

Antiderivative was successfully verified.

```
[In] Int[E^x*(-E^(-x) + E^x)^3,x]

[Out] 1/(2*E^(2*x)) - (3*E^(2*x))/2 + E^(4*x)/4 + 3*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{3e^{2x}}{2}+\frac{3\log\left(e^{2x}\right)}{2}+\frac{\int^{e^{2x}} x\,dx}{2}+\frac{e^{-2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)*(-1/exp(x)+exp(x))**3,x)

[Out] -3*exp(2*x)/2 + 3*log(exp(2*x))/2 + Integral(x, (x, exp(2*x)))/2
+ exp(-2*x)/2
```

Mathematica [A] time = 0.01284, size = 27, normalized size = 0.87

$$\frac{1}{4}\left(12x+2e^{-2x}-6e^{2x}+e^{4x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[E^x*(-E^(-x) + E^x)^3,x]

[Out] (2/E^(2*x) - 6*E^(2*x) + E^(4*x) + 12*x)/4
```

Maple [A] time = 0.01, size = 25, normalized size = 0.8

$$\frac{\left(e^x\right)^4}{4}-\frac{3\left(e^x\right)^2}{2}+3\ln\left(e^x\right)+\frac{1}{2\left(e^x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)*(-1/exp(x)+exp(x))^3,x)
```

```
[Out] 1/4*exp(x)^4-3/2*exp(x)^2+3*ln(exp(x))+1/2/exp(x)^2
```

Maxima [A] time = 0.81548, size = 32, normalized size = 1.03

$$-\frac{1}{4}\left(6\,e^{(-2\,x)}-1\right)e^{(4\,x)}+3\,x+\frac{1}{2}\,e^{(-2\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) - e^x)^3*e^x,x, algorithm="maxima")
```

```
[Out] -1/4*(6*e^(-2*x) - 1)*e^(4*x) + 3*x + 1/2*e^(-2*x)
```

Fricas [A] time = 0.265129, size = 34, normalized size = 1.1

$$\frac{1}{4}\left(12\,xe^{(2\,x)}+e^{(6\,x)}-6\,e^{(4\,x)}+2\right)e^{(-2\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) - e^x)^3*e^x,x, algorithm="fricas")
```

```
[Out] 1/4*(12*x*e^(2*x) + e^(6*x) - 6*e^(4*x) + 2)*e^(-2*x)
```

Sympy [A] time = 0.136848, size = 26, normalized size = 0.84

$$3x+\frac{e^{4x}}{4}-\frac{3e^{2x}}{2}+\frac{e^{-2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(-1/exp(x)+exp(x))**3,x)
```

```
[Out] 3*x + exp(4*x)/4 - 3*exp(2*x)/2 + exp(-2*x)/2
```

GIAC/XCAS [A] time = 0.234632, size = 41, normalized size = 1.32

$$-\frac{1}{2}\left(3\,e^{(2\,x)}-1\right)e^{(-2\,x)}+3\,x+\frac{1}{4}\,e^{(4\,x)}-\frac{3}{2}\,e^{(2\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) - e^x)^3*e^x,x, algorithm="giac")
```

```
[Out] -1/2*(3*e^(2*x) - 1)*e^(-2*x) + 3*x + 1/4*e^(4*x) - 3/2*e^(2*x)
```

3.707 $\int \frac{1+4^x}{1+2^x} \, dx$

Optimal. Leaf size=22

$$x-\frac{2\log(2^x+1)}{\log(2)}+\frac{2^x}{\log(2)}$$

```
[Out] x + 2^x/Log[2] - (2*Log[1 + 2^x])/Log[2]
```

Rubi [A] time = 0.0550176, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$x-\frac{2\log(2^x+1)}{\log(2)}+\frac{2^x}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + 4^x)/(1 + 2^x),x]

[Out] x + 2^x/Log[2] - (2*Log[1 + 2^x])/Log[2]
```

Rubi in Sympy [A] time = 9.90242, size = 26, normalized size = 1.18

$$\frac{2^x}{\log(2)}+\frac{\log(2^x)}{\log(2)}-\frac{2\log(2^x+1)}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+4**x)/(1+2**x),x)

[Out] 2**x/log(2) + log(2**x)/log(2) - 2*log(2**x + 1)/log(2)
```

Mathematica [A] time = 0.00962701, size = 22, normalized size = 1.

$$x-\frac{2\log(2^x+1)}{\log(2)}+\frac{2^x}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + 4^x)/(1 + 2^x),x]

[Out] x + 2^x/Log[2] - (2*Log[1 + 2^x])/Log[2]
```

Maple [A] time = 0.017, size = 27, normalized size = 1.2

$$x+\frac{e^{x\ln(2)}}{\ln(2)}-2\,\frac{\ln\left(1+e^{x\ln(2)}\right)}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+4^x)/(1+2^x),x)
```

```
[Out] x+1/ln(2)*exp(x*ln(2))-2/ln(2)*ln(1+exp(x*ln(2)))
```

Maxima [A] time = 0.829554, size = 30, normalized size = 1.36

$$x + \frac{2^x}{\log(2)} - \frac{2 \log(2^x + 1)}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4^x + 1)/(2^x + 1),x, algorithm="maxima")

[Out] x + 2^x/log(2) - 2*log(2^x + 1)/log(2)
```

Fricas [A] time = 0.275077, size = 28, normalized size = 1.27

$$\frac{x\log(2) + 2^x - 2 \log(2^x + 1)}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4^x + 1)/(2^x + 1),x, algorithm="fricas")

[Out] (x*log(2) + 2^x - 2*log(2^x + 1))/log(2)
```

Sympy [A] time = 0.106709, size = 19, normalized size = 0.86

$$\frac{2^x}{\log(2)} + x - \frac{2\log(2^x + 1)}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+4**x)/(1+2**x),x)

[Out] 2**x/log(2) + x - 2*log(2**x + 1)/log(2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^x + 1}{2^x + 1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4^x + 1)/(2^x + 1),x, algorithm="giac")

[Out] integrate((4^x + 1)/(2^x + 1), x)
```

3.708 $\int \frac{1+4^x}{1+2^{-x}} \, dx$

Optimal. Leaf size=34

$$\frac{2\log(2^x+1)}{\log(2)} - \frac{2^x}{\log(2)} + \frac{2^{2x-1}}{\log(2)}$$

```
[Out] -(2^x/Log[2]) + 2^(-1 + 2*x)/Log[2] + (2*Log[1 + 2^x])/Log[2]
```

Rubi [A] time = 0.0547117, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{2\log(2^x+1)}{\log(2)} - \frac{2^x}{\log(2)} + \frac{2^{2x-1}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + 4^x)/(1 + 2^(-x)),x]
```

```
[Out] -(2^x/Log[2]) + 2^(-1 + 2*x)/Log[2] + (2*Log[1 + 2^x])/Log[2]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2^x}{\log(2)} + \frac{2\log(2^x+1)}{\log(2)} + \frac{\int^{2^x} x\,dx}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((1+4**x)/(1+1/(2**x)),x)
```

```
[Out] -2**x/log(2) + 2*log(2**x + 1)/log(2) + Integral(x, (x, 2**x))/lo
g(2)
```

Mathematica [A] time = 0.0155749, size = 23, normalized size = 0.68

$$\frac{2^x(2^x-2)+4\log(2^x+1)}{\log(4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + 4^x)/(1 + 2^(-x)),x]
```

```
[Out] (2^x*(-2 + 2^x) + 4*Log[1 + 2^x])/Log[4]
```

Maple [A] time = 0.017, size = 40, normalized size = 1.2

$$-\frac{e^{x\ln(2)}}{\ln(2)} + \frac{\left(e^{x\ln(2)}\right)^2}{2\ln(2)} + 2\frac{\ln\left(1+e^{x\ln(2)}\right)}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+4^x)/(1+1/(2^x)),x)

[Out] -1/ln(2)*exp(x*ln(2))+1/2/ln(2)*exp(x*ln(2))^2+2/ln(2)*ln(1+exp(x
*ln(2)))
```

Maxima [A] time = 0.88386, size = 54, normalized size = 1.59

$$2\,x - \frac{2^{2\,x-1}\left(2^{-x+1} - 1\right)}{\log\left(2\right)} + \frac{2\,\log\left(\frac{1}{2^{x}} + 1\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4^x + 1)/(1/2^x + 1),x, algorithm="maxima")

[Out] 2*x - 2^(2*x - 1)*(2^(-x + 1) - 1)/log(2) + 2*log(1/2^x + 1)/log(
2)
```

Fricas [A] time = 0.236719, size = 34, normalized size = 1.

$$\frac{2^{2\,x} - 2 \cdot 2^{x} + 4\,\log\left(2^{x} + 1\right)}{2\,\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4^x + 1)/(1/2^x + 1),x, algorithm="fricas")

[Out] 1/2*(2^(2*x) - 2*2^x + 4*log(2^x + 1))/log(2)
```

Sympy [A] time = 0.58934, size = 39, normalized size = 1.15

$$2x + \frac{2^{2x}\log\left(2\right) - 2 \cdot 2^{x}\log\left(2\right)}{2\log\left(2\right)^{2}} + \frac{2\log\left(1 + 2^{-x}\right)}{\log\left(2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+4**x)/(1+1/(2**x)),x)

[Out] 2*x + (2**(2*x)*log(2) - 2*2**x*log(2))/(2*log(2)**2) + 2*log(1 +
 2**(-x))/log(2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{4^{x} + 1}{\frac{1}{2^{x}} + 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4^x + 1)/(1/2^x + 1),x, algorithm="giac")

[Out] integrate((4^x + 1)/(1/2^x + 1), x)
```

3.709 $\int \left(\frac{e^{(a+x)^2}}{x^2}-\frac{2ae^{(a+x)^2}}{x}\right)\,dx$

Optimal. Leaf size=23

$$\sqrt{\pi}\text{Erfi}(a+x)-\frac{e^{(a+x)^2}}{x}$$

```
[Out] -(E^(a + x)^2/x) + Sqrt[Pi]*Erfi[a + x]
```

Rubi [A] time = 0.0731536, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\sqrt{\pi}\text{Erfi}(a+x)-\frac{e^{(a+x)^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + x)^2/x^2 - (2*a*E^(a + x)^2)/x,x]

[Out] -(E^(a + x)^2/x) + Sqrt[Pi]*Erfi[a + x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$2\int e^{(a+x)^2}\,dx-\frac{e^{(a+x)^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((a+x)**2)/x**2-2*a*exp((a+x)**2)/x,x)

[Out] 2*Integral(exp((a + x)**2), x) - exp((a + x)**2)/x
```

Mathematica [A] time = 0.0284814, size = 23, normalized size = 1.

$$\sqrt{\pi}\text{Erfi}(a+x)-\frac{e^{(a+x)^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(a + x)^2/x^2 - (2*a*E^(a + x)^2)/x,x]

[Out] -(E^(a + x)^2/x) + Sqrt[Pi]*Erfi[a + x]
```

Maple [F] time = 0.091, size = 0, normalized size = 0.

$$\int \frac{e^{(a+x)^2}}{x^2}-2\,\frac{ae^{(a+x)^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((a+x)^2)/x^2-2*a*exp((a+x)^2)/x,x)
```

```
[Out] int(exp((a+x)^2)/x^2-2*a*exp((a+x)^2)/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{2\,ae^{\left((a+x)^2\right)}}{x} + \frac{e^{\left((a+x)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-2*a*e^((a + x)^2)/x + e^((a + x)^2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(-2*a*e^((a + x)^2)/x + e^((a + x)^2)/x^2, x)
```

Fricas [A] time = 0.243643, size = 38, normalized size = 1.65

$$\frac{\sqrt{\pi}x\,\mathrm{erfi}\left(a+x\right) - e^{\left(a^2+2\,ax+x^2\right)}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-2*a*e^((a + x)^2)/x + e^((a + x)^2)/x^2,x, algorithm="fricas")
```

```
[Out] (sqrt(pi)*x*erfi(a + x) - e^(a^2 + 2*a*x + x^2))/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\left(\int\left(-\frac{e^{x^2}e^{2ax}}{x^2}\right)dx + \int\frac{2ae^{x^2}e^{2ax}}{x}\,dx\right)e^{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((a+x)**2)/x**2-2*a*exp((a+x)**2)/x,x)
```

```
[Out] -(Integral(-exp(x**2)*exp(2*a*x)/x**2, x) + Integral(2*a*exp(x**2
)*exp(2*a*x)/x, x))*exp(a**2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -\frac{2\,ae^{\left((a+x)^2\right)}}{x} + \frac{e^{\left((a+x)^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-2*a*e^((a + x)^2)/x + e^((a + x)^2)/x^2,x, algorithm="giac")
```

```
[Out] integrate(-2*a*e^((a + x)^2)/x + e^((a + x)^2)/x^2, x)
```

3.710 $\int e^{-x^2} \left(x^4+x^6+x^8\right) \, dx$

Optimal. Leaf size=66

$$\frac{147}{32}\sqrt{\pi}\text{Erf}(x)-\frac{147}{16}e^{-x^2}x-\frac{1}{2}e^{-x^2}x^7-\frac{9}{4}e^{-x^2}x^5-\frac{49}{8}e^{-x^2}x^3$$

```
[Out] (-147*x)/(16*E^x^2) - (49*x^3)/(8*E^x^2) - (9*x^5)/(4*E^x^2) - x^
7/(2*E^x^2) + (147*Sqrt[Pi]*Erf[x])/32
```

Rubi [A] time = 0.268554, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 15, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$\frac{147}{32}\sqrt{\pi}\text{Erf}(x)-\frac{147}{16}e^{-x^2}x-\frac{1}{2}e^{-x^2}x^7-\frac{9}{4}e^{-x^2}x^5-\frac{49}{8}e^{-x^2}x^3$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4 + x^6 + x^8)/E^x^2,x]
```

```
[Out] (-147*x)/(16*E^x^2) - (49*x^3)/(8*E^x^2) - (9*x^5)/(4*E^x^2) - x^
7/(2*E^x^2) + (147*Sqrt[Pi]*Erf[x])/32
```

Rubi in Sympy [A] time = 20.0825, size = 54, normalized size = 0.82

$$-\frac{x^7e^{-x^2}}{2}-\frac{9x^5e^{-x^2}}{4}-\frac{49x^3e^{-x^2}}{8}-\frac{147xe^{-x^2}}{16}+\frac{147\sqrt{\pi}\operatorname{erf}(x)}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((x**8+x**6+x**4)/exp(x**2),x)
```

```
[Out] -x**7*exp(-x**2)/2 - 9*x**5*exp(-x**2)/4 - 49*x**3*exp(-x**2)/8 -
 147*x*exp(-x**2)/16 + 147*sqrt(pi)*erf(x)/32
```

Mathematica [A] time = 0.029442, size = 41, normalized size = 0.62

$$\frac{1}{32}\left(147\sqrt{\pi}\text{Erf}(x)-2e^{-x^2}x\left(8x^6+36x^4+98x^2+147\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4 + x^6 + x^8)/E^x^2,x]
```

```
[Out] ((-2*x*(147 + 98*x^2 + 36*x^4 + 8*x^6))/E^x^2 + 147*Sqrt[Pi]*Erf[
x])/32
```

Maple [A] time = 0.013, size = 51, normalized size = 0.8

$$-\frac{147\,x}{16\,e^{x^2}}-\frac{49\,x^3}{8\,e^{x^2}}-\frac{9\,x^5}{4\,e^{x^2}}-\frac{x^7}{2\,e^{x^2}}+\frac{147\,Erf(x)\sqrt{\pi}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((x^8+x^6+x^4)/exp(x^2),x)
```

```
[Out] -147/16*x/exp(x^2)-49/8*x^3/exp(x^2)-9/4*x^5/exp(x^2)-1/2*x^7/exp
(x^2)+147/32*erf(x)*Pi^(1/2)
```

Maxima [A] time = 0.781822, size = 100, normalized size = 1.52

$$-\frac{1}{16}\left(8x^7+28x^5+70x^3+105x\right)e^{\left(-x^2\right)}-\frac{1}{8}\left(4x^5+10x^3+15x\right)e^{\left(-x^2\right)}-\frac{1}{4}\left(2x^3+3x\right)e^{\left(-x^2\right)}+\frac{147}{32}\sqrt{\pi}\operatorname{erf}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^8 + x^6 + x^4)*e^(-x^2),x, algorithm="maxima")
```

```
[Out] -1/16*(8*x^7 + 28*x^5 + 70*x^3 + 105*x)*e^(-x^2) - 1/8*(4*x^5 + 1
0*x^3 + 15*x)*e^(-x^2) - 1/4*(2*x^3 + 3*x)*e^(-x^2) + 147/32*sqrt
(pi)*erf(x)
```

Fricas [A] time = 0.24824, size = 47, normalized size = 0.71

$$-\frac{1}{16}\left(8x^7+36x^5+98x^3+147x\right)e^{\left(-x^2\right)}+\frac{147}{32}\sqrt{\pi}\operatorname{erf}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^8 + x^6 + x^4)*e^(-x^2),x, algorithm="fricas")
```

```
[Out] -1/16*(8*x^7 + 36*x^5 + 98*x^3 + 147*x)*e^(-x^2) + 147/32*sqrt(pi
)*erf(x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x**8+x**6+x**4)/exp(x**2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.235385, size = 47, normalized size = 0.71

$$-\frac{1}{16}\left(8x^7+36x^5+98x^3+147x\right)e^{\left(-x^2\right)}+\frac{147}{32}\sqrt{\pi}\operatorname{erf}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^8 + x^6 + x^4)*e^(-x^2),x, algorithm="giac")
```

```
[Out] -1/16*(8*x^7 + 36*x^5 + 98*x^3 + 147*x)*e^(-x^2) + 147/32*sqrt(pi
)*erf(x)
```

3.711 $\int \frac{1}{-e^x+e^{3x}}\,dx$

Optimal. Leaf size=12

$$e^{-x} - \tanh^{-1}(e^x)$$

```
[Out] E^(-x) - ArcTanh[E^x]
```

Rubi [A] time = 0.024944, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$e^{-x} - \tanh^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In]  Int[(-E^x + E^(3*x))^(-1),x]

[Out] E^(-x) - ArcTanh[E^x]
```

Rubi in Sympy [A] time = 10.7913, size = 10, normalized size = 0.83

$$-\operatorname{atanh}(e^{-x}) + e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-exp(x)+exp(3*x)),x)

[Out] -atanh(exp(-x)) + exp(-x)
```

Mathematica [B] time = 0.0205851, size = 32, normalized size = 2.67

$$e^{-x} + \frac{1}{2}\log(1 - e^{-x}) - \frac{1}{2}\log(e^{-x} + 1)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-E^x + E^(3*x))^(-1),x]

[Out] E^(-x) + Log[1 - E^(-x)]/2 - Log[1 + E^(-x)]/2
```

Maple [A] time = 0.013, size = 20, normalized size = 1.7

$$-\frac{\ln(1 + e^x)}{2} + \frac{\ln(-1 + e^x)}{2} + (e^x)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-exp(x)+exp(3*x)),x)

[Out] -1/2*ln(1+exp(x))+1/2*ln(-1+exp(x))+1/exp(x)
```

Maxima [A] time = 0.782392, size = 26, normalized size = 2.17

$$e^{(-x)} - \frac{1}{2}\log\left(e^{x} + 1\right) + \frac{1}{2}\log\left(e^{x} - 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(3*x) - e^x),x, algorithm="maxima")
```

```
[Out] e^(-x) - 1/2*log(e^x + 1) + 1/2*log(e^x - 1)
```

Fricas [A] time = 0.26685, size = 34, normalized size = 2.83

$$-\frac{1}{2}\left(e^{x}\log\left(e^{x} + 1\right) - e^{x}\log\left(e^{x} - 1\right) - 2\right)e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(3*x) - e^x),x, algorithm="fricas")
```

```
[Out] -1/2*(e^x*log(e^x + 1) - e^x*log(e^x - 1) - 2)*e^(-x)
```

Sympy [A] time = 0.104595, size = 20, normalized size = 1.67

$$\frac{\log\left(e^{x} - 1\right)}{2} - \frac{\log\left(e^{x} + 1\right)}{2} + e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-exp(x)+exp(3*x)),x)
```

```
[Out] log(exp(x) - 1)/2 - log(exp(x) + 1)/2 + exp(-x)
```

GIAC/XCAS [A] time = 0.230677, size = 27, normalized size = 2.25

$$e^{(-x)} - \frac{1}{2}\ln\left(e^{x} + 1\right) + \frac{1}{2}\ln\left(|e^{x} - 1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e^(3*x) - e^x),x, algorithm="giac")
```

```
[Out] e^(-x) - 1/2*ln(e^x + 1) + 1/2*ln(abs(e^x - 1))
```

3.712 $\int \frac{e^x(-5+x+x^2)}{(-1+x)^2} dx$

Optimal. Leaf size=16

$$e^x - \frac{3e^x}{1-x}$$

```
[Out] E^x - (3*E^x)/(1 - x)
```

Rubi [A] time = 0.11103, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$e^x - \frac{3e^x}{1-x}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x*(-5 + x + x^2))/(-1 + x)^2,x]

[Out] E^x - (3*E^x)/(1 - x)
```

Rubi in Sympy [A] time = 12.4154, size = 10, normalized size = 0.62

$$e^x - \frac{3e^x}{-x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(x**2+x-5)/(-1+x)**2,x)

[Out] exp(x) - 3*exp(x)/(-x + 1)
```

Mathematica [A] time = 0.0103044, size = 13, normalized size = 0.81

$$e^x \left(\frac{3}{x-1}+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x*(-5 + x + x^2))/(-1 + x)^2,x]

[Out] E^x*(1 + 3/(-1 + x))
```

Maple [A] time = 0.005, size = 12, normalized size = 0.8

$$\frac{(x+2)\,e^x}{-1+x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(x^2+x-5)/(-1+x)^2,x)
```

```
[Out] 1/(-1+x)*(x+2)*exp(x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\frac{(x^2+x)e^x}{x^2-2x+1}+\frac{5\,eexp_integral_e(2,-x+1)}{x-1}+\int\frac{(3x+1)e^x}{x^3-3x^2+3x-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 + x - 5)*e^x/(x - 1)^2,x, algorithm="maxima")
```

```
[Out] (x^2 + x)*e^x/(x^2 - 2*x + 1) + 5*e*exp_integral_e(2, -x + 1)/(x
- 1) + integrate((3*x + 1)*e^x/(x^3 - 3*x^2 + 3*x - 1), x)
```

Fricas [A] time = 0.228617, size = 15, normalized size = 0.94

$$\frac{(x+2)e^x}{x-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 + x - 5)*e^x/(x - 1)^2,x, algorithm="fricas")
```

```
[Out] (x + 2)*e^x/(x - 1)
```

Sympy [A] time = 0.087631, size = 8, normalized size = 0.5

$$\frac{(x+2)\,e^x}{x-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(x**2+x-5)/(-1+x)**2,x)
```

```
[Out] (x + 2)*exp(x)/(x - 1)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$undef$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x^2 + x - 5)*e^x/(x - 1)^2,x, algorithm="giac")
```

```
[Out] undef
```

3.713 $\int \frac{e^{x^2} x^3}{(1+x^2)^2} \, dx$

Optimal. Leaf size=16

$$\frac{e^{x^2}}{2(x^2+1)}$$

```
[Out] E^x^2/(2*(1 + x^2))
```

Rubi [A] time = 0.0823358, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{e^{x^2}}{2(x^2+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x^2*x^3)/(1 + x^2)^2,x]

[Out] E^x^2/(2*(1 + x^2))
```

Rubi in Sympy [A] time = 9.8791, size = 10, normalized size = 0.62

$$\frac{e^{x^2}}{2(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**2)*x**3/(x**2+1)**2,x)

[Out] exp(x**2)/(2*(x**2 + 1))
```

Mathematica [A] time = 0.0100631, size = 16, normalized size = 1.

$$\frac{e^{x^2}}{2(x^2+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x^2*x^3)/(1 + x^2)^2,x]

[Out] E^x^2/(2*(1 + x^2))
```

Maple [A] time = 0.008, size = 14, normalized size = 0.9

$$\frac{e^{x^2}}{2x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^2)*x^3/(x^2+1)^2,x)
```

```
[Out] 1/2*exp(x^2)/(x^2+1)
```

Maxima [A] time = 0.772056, size = 18, normalized size = 1.12

$$\frac{e^{(x^2)}}{2\,(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(x^2)/(x^2 + 1)^2,x, algorithm="maxima")
```

```
[Out] 1/2*e^(x^2)/(x^2 + 1)
```

Fricas [A] time = 0.216306, size = 18, normalized size = 1.12

$$\frac{e^{(x^2)}}{2\,(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(x^2)/(x^2 + 1)^2,x, algorithm="fricas")
```

```
[Out] 1/2*e^(x^2)/(x^2 + 1)
```

Sympy [A] time = 0.07536, size = 10, normalized size = 0.62

$$\frac{e^{x^2}}{2x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**2)*x**3/(x**2+1)**2,x)
```

```
[Out] exp(x**2)/(2*x**2 + 2)
```

GIAC/XCAS [A] time = 0.227179, size = 18, normalized size = 1.12

$$\frac{e^{(x^2)}}{2\,(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3*e^(x^2)/(x^2 + 1)^2,x, algorithm="giac")
```

```
[Out] 1/2*e^(x^2)/(x^2 + 1)
```

3.714 $\int \frac{e^{3x}}{\sqrt{25+16e^{2x}}}\,dx$

Optimal. Leaf size=33

$$\frac{1}{32}e^x\sqrt{16e^{2x}+25}-\frac{25}{128}\sinh^{-1}\left(\frac{4e^x}{5}\right)$$

```
[Out] (E^x*Sqrt[25 + 16*E^(2*x)])/32 - (25*ArcSinh[(4*E^x)/5])/128
```

Rubi [A] time = 0.0574667, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{1}{32}e^x\sqrt{16e^{2x}+25}-\frac{25}{128}\sinh^{-1}\left(\frac{4e^x}{5}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[E^(3*x)/Sqrt[25 + 16*E^(2*x)],x]
```

```
[Out] (E^x*Sqrt[25 + 16*E^(2*x)])/32 - (25*ArcSinh[(4*E^x)/5])/128
```

Rubi in Sympy [A] time = 8.219, size = 27, normalized size = 0.82

$$\frac{\sqrt{16e^{2x}+25}e^x}{32}-\frac{25\operatorname{asinh}\left(\frac{4e^x}{5}\right)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(3*x)/(25+16*exp(2*x))**(1/2),x)
```

```
[Out] sqrt(16*exp(2*x) + 25)*exp(x)/32 - 25*asinh(4*exp(x)/5)/128
```

Mathematica [A] time = 0.0252025, size = 33, normalized size = 1.

$$\frac{1}{32}e^x\sqrt{16e^{2x}+25}-\frac{25}{128}\sinh^{-1}\left(\frac{4e^x}{5}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^(3*x)/Sqrt[25 + 16*E^(2*x)],x]
```

```
[Out] (E^x*Sqrt[25 + 16*E^(2*x)])/32 - (25*ArcSinh[(4*E^x)/5])/128
```

Maple [A] time = 0.016, size = 23, normalized size = 0.7

$$\frac{e^x}{32}\sqrt{25+16\,(e^x)^2}-\frac{25}{128}\mathit{Arcsinh}\left(\frac{4\,e^x}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(3*x)/(25+16*exp(2*x))^(1/2),x)
```

```
[Out] 1/32*exp(x)*(25+16*exp(x)^2)^(1/2)-25/128*arcsinh(4/5*exp(x))
```

Maxima [A] time = 0.792142, size = 100, normalized size = 3.03

$$\frac{25 \sqrt{16 e^{(2x)} + 25} e^{(-x)}}{32 \left(\left(16 e^{(2x)} + 25\right) e^{(-2x)} - 16\right)} - \frac{25}{256} \log\left(\sqrt{16 e^{(2x)} + 25} e^{(-x)} + 4\right) + \frac{25}{256} \log\left(\sqrt{16 e^{(2x)} + 25} e^{(-x)} - 4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/sqrt(16*e^(2*x) + 25),x, algorithm="maxima")
```

```
[Out] 25/32*sqrt(16*e^(2*x) + 25)*e^(-x)/((16*e^(2*x) + 25)*e^(-2*x) -
16) - 25/256*log(sqrt(16*e^(2*x) + 25)*e^(-x) + 4) + 25/256*log(s
qrt(16*e^(2*x) + 25)*e^(-x) - 4)
```

Fricas [A] time = 0.259502, size = 138, normalized size = 4.18

$$\frac{25 \left(8 \sqrt{16 e^{(2x)} + 25} e^{x} - 32 e^{(2x)} - 25\right) \log\left(\sqrt{16 e^{(2x)} + 25} - 4 e^{x}\right) - 4 \left(32 e^{(3x)} + 25 e^{x}\right) \sqrt{16 e^{(2x)} + 25} + 512 e^{(4x)} + 800 e^{(}}{128 \left(8 \sqrt{16 e^{(2x)} + 25} e^{x} - 32 e^{(2x)} - 25\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/sqrt(16*e^(2*x) + 25),x, algorithm="fricas")
```

```
[Out] 1/128*(25*(8*sqrt(16*e^(2*x) + 25)*e^x - 32*e^(2*x) - 25)*log(sqr
t(16*e^(2*x) + 25) - 4*e^x) - 4*(32*e^(3*x) + 25*e^x)*sqrt(16*e^(
2*x) + 25) + 512*e^(4*x) + 800*e^(2*x))/(8*sqrt(16*e^(2*x) + 25)*
e^x - 32*e^(2*x) - 25)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^{3x}}{\sqrt{16e^{2x} + 25}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(3*x)/(25+16*exp(2*x))**(1/2),x)
```

```
[Out] Integral(exp(3*x)/sqrt(16*exp(2*x) + 25), x)
```

GIAC/XCAS [A] time = 0.223246, size = 45, normalized size = 1.36

$$\frac{1}{32} \sqrt{16 e^{(2x)} + 25} e^{x} + \frac{25}{128} \ln\left(\sqrt{16 e^{(2x)} + 25} - 4 e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(3*x)/sqrt(16*e^(2*x) + 25),x, algorithm="giac")
```

```
[Out] 1/32*sqrt(16*e^(2*x) + 25)*e^x + 25/128*ln(sqrt(16*e^(2*x) + 25)
- 4*e^x)
```

3.715 $\int \frac{1+e^x}{\sqrt{e^x+x}} dx$

Optimal. Leaf size=11

$$2\sqrt{x+e^x}$$

```
[Out] 2*Sqrt[E^x + x]
```

Rubi [A] time = 0.0415616, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$2\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + E^x)/Sqrt[E^x + x],x]

[Out] 2*Sqrt[E^x + x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x+1}{\sqrt{x+e^x}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+exp(x))/(exp(x)+x)**(1/2),x)

[Out] Integral((exp(x) + 1)/sqrt(x + exp(x)), x)
```

Mathematica [A] time = 0.00882481, size = 11, normalized size = 1.

$$2\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + E^x)/Sqrt[E^x + x],x]

[Out] 2*Sqrt[E^x + x]
```

Maple [A] time = 0.007, size = 9, normalized size = 0.8

$$2\sqrt{e^x+x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+exp(x))/(exp(x)+x)^(1/2),x)

[Out] 2*(exp(x)+x)^(1/2)
```

Maxima [A] time = 0.745597, size = 11, normalized size = 1.

$$2\sqrt{x+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x + 1)/sqrt(x + e^x),x, algorithm="maxima")
```

```
[Out] 2*sqrt(x + e^x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x + 1)/sqrt(x + e^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0.173156, size = 8, normalized size = 0.73

$$2\sqrt{x+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+exp(x))/(exp(x)+x)**(1/2),x)
```

```
[Out] 2*sqrt(x + exp(x))
```

GIAC/XCAS [A] time = 0.227797, size = 11, normalized size = 1.

$$2\sqrt{x+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x + 1)/sqrt(x + e^x),x, algorithm="giac")
```

```
[Out] 2*sqrt(x + e^x)
```

3.716 $\int \frac{1+e^x}{e^x+x}\,dx$

Optimal. Leaf size=6

$$\log\left(x+e^x\right)$$

```
[Out] Log[E^x + x]
```

Rubi [A] time = 0.0326178, antiderivative size = 6, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\log\left(x+e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + E^x)/(E^x + x),x]
```

```
[Out] Log[E^x + x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x+1}{x+e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+exp(x))/(exp(x)+x),x)
```

```
[Out] Integral((exp(x) + 1)/(x + exp(x)), x)
```

Mathematica [A] time = 0.00249587, size = 6, normalized size = 1.

$$\log\left(x+e^x\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + E^x)/(E^x + x),x]
```

```
[Out] Log[E^x + x]
```

Maple [A] time = 0.003, size = 6, normalized size = 1.

$$\ln\left(e^x+x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+exp(x))/(exp(x)+x),x)
```

```
[Out] ln(exp(x)+x)
```

Maxima [A] time = 0.776596, size = 7, normalized size = 1.17

$$\log(x + e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x + 1)/(x + e^x),x, algorithm="maxima")
```

```
[Out] log(x + e^x)
```

Fricas [A] time = 0.384433, size = 7, normalized size = 1.17

$$\log(x + e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x + 1)/(x + e^x),x, algorithm="fricas")
```

```
[Out] log(x + e^x)
```

Sympy [A] time = 0.079539, size = 5, normalized size = 0.83

$$\log(x + e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+exp(x))/(exp(x)+x),x)
```

```
[Out] log(x + exp(x))
```

GIAC/XCAS [A] time = 0.225422, size = 7, normalized size = 1.17

$$\ln(x + e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((e^x + 1)/(x + e^x),x, algorithm="giac")
```

```
[Out] ln(x + e^x)
```

3.717 $\int \frac{e^{x^2}}{x^2}\,dx$

Optimal. Leaf size=19

$$\sqrt{\pi}\text{Erfi}(x)-\frac{e^{x^2}}{x}$$

```
[Out] -(E^x^2/x) + Sqrt[Pi]*Erfi[x]
```

Rubi [A] time = 0.0268408, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$\sqrt{\pi}\text{Erfi}(x)-\frac{e^{x^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x^2/x^2,x]

[Out] -(E^x^2/x) + Sqrt[Pi]*Erfi[x]
```

Rubi in Sympy [A] time = 2.91421, size = 14, normalized size = 0.74

$$\sqrt{\pi}\,\text{erfi}\,(x)-\frac{e^{x^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**2)/x**2,x)

[Out] sqrt(pi)*erfi(x) - exp(x**2)/x
```

Mathematica [A] time = 0.00752248, size = 19, normalized size = 1.

$$\sqrt{\pi}\text{Erfi}(x)-\frac{e^{x^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^2/x^2,x]

[Out] -(E^x^2/x) + Sqrt[Pi]*Erfi[x]
```

Maple [A] time = 0.004, size = 17, normalized size = 0.9

$$-\frac{e^{x^2}}{x}+\mathit{erfi}\,(x)\sqrt{\pi}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^2)/x^2,x)
```

```
[Out] -exp(x^2)/x+erfi(x)*Pi^(1/2)
```

Maxima [A] time = 0.808435, size = 26, normalized size = 1.37

$$-\frac{\sqrt{-x^2}\,\left(-\frac{1}{2},-x^2\right)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x^2)/x^2,x, algorithm="maxima")

[Out] -1/2*sqrt(-x^2)*gamma(-1/2, -x^2)/x
```

Fricas [A] time = 0.283472, size = 24, normalized size = 1.26

$$\frac{\sqrt{\pi}x\,\mathrm{erfi}\,(x)-e^{\left(x^2\right)}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x^2)/x^2,x, algorithm="fricas")

[Out] (sqrt(pi)*x*erfi(x) - e^(x^2))/x
```

Sympy [A] time = 1.08088, size = 14, normalized size = 0.74

$$\sqrt{\pi}\,\mathrm{erfi}\,(x)-\frac{e^{x^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**2)/x**2,x)

[Out] sqrt(pi)*erfi(x) - exp(x**2)/x
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{e^{\left(x^2\right)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(x^2)/x^2,x, algorithm="giac")

[Out] integrate(e^(x^2)/x^2, x)
```

3.718 $\int \frac{e^{x^2}(1+4x^4)}{x^2} dx$

Optimal. Leaf size=19

$$2e^{x^2}x - \frac{e^{x^2}}{x}$$

```
[Out] -(E^x^2/x) + 2*E^x^2*x
```

Rubi [A] time = 0.153611, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$2e^{x^2}x - \frac{e^{x^2}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(E^x^2*(1 + 4*x^4))/x^2,x]
```

```
[Out] -(E^x^2/x) + 2*E^x^2*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(4x^4+1)\, e^{x^2}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**2)*(4*x**4+1)/x**2,x)
```

```
[Out] Integral((4*x**4 + 1)*exp(x**2)/x**2, x)
```

Mathematica [A] time = 0.00785526, size = 15, normalized size = 0.79

$$e^{x^2}\left(2x - \frac{1}{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(E^x^2*(1 + 4*x^4))/x^2,x]
```

```
[Out] E^x^2*(-x^(-1) + 2*x)
```

Maple [A] time = 0.007, size = 16, normalized size = 0.8

$$\frac{e^{x^2}(2x^2-1)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^2)*(4*x^4+1)/x^2,x)
```

```
[Out] exp(x^2)*(2*x^2-1)/x
```

Maxima [A] time = 0.839024, size = 49, normalized size = 2.58

$$2\,xe^{\left(x^2\right)} + i\,\sqrt{\pi}\,\mathrm{erf}\left(i\,x\right) - \frac{\sqrt{-x^2}\,\Gamma\left(-\frac{1}{2}, -x^2\right)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x^4 + 1)*e^(x^2)/x^2,x, algorithm="maxima")
```

```
[Out] 2*x*e^(x^2) + I*sqrt(pi)*erf(I*x) - 1/2*sqrt(-x^2)*gamma(-1/2, -x
^2)/x
```

Fricas [A] time = 0.246013, size = 20, normalized size = 1.05

$$\frac{\left(2\,x^2 - 1\right)e^{\left(x^2\right)}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x^4 + 1)*e^(x^2)/x^2,x, algorithm="fricas")
```

```
[Out] (2*x^2 - 1)*e^(x^2)/x
```

Sympy [A] time = 0.070949, size = 12, normalized size = 0.63

$$\frac{\left(2x^2 - 1\right)e^{x^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**2)*(4*x**4+1)/x**2,x)
```

```
[Out] (2*x**2 - 1)*exp(x**2)/x
```

GIAC/XCAS [A] time = 0.219867, size = 27, normalized size = 1.42

$$\frac{2\,x^2e^{\left(x^2\right)} - e^{\left(x^2\right)}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x^4 + 1)*e^(x^2)/x^2,x, algorithm="giac")
```

```
[Out] (2*x^2*e^(x^2) - e^(x^2))/x
```

3.719 $\int \sqrt{f^x}(a+bx)^2\,dx$

Optimal. Leaf size=56

$$-\frac{8b\sqrt{f^x}(a+bx)}{\log^2(f)}+\frac{2\sqrt{f^x}(a+bx)^2}{\log(f)}+\frac{16b^2\sqrt{f^x}}{\log^3(f)}$$

```
[Out] (16*b^2*Sqrt[f^x])/Log[f]^3 - (8*b*Sqrt[f^x]*(a + b*x))/Log[f]^2
+ (2*Sqrt[f^x]*(a + b*x)^2)/Log[f]
```

Rubi [A] time = 0.0674831, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$-\frac{8b\sqrt{f^x}(a+bx)}{\log^2(f)}+\frac{2\sqrt{f^x}(a+bx)^2}{\log(f)}+\frac{16b^2\sqrt{f^x}}{\log^3(f)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[f^x]*(a + b*x)^2,x]
```

```
[Out] (16*b^2*Sqrt[f^x])/Log[f]^3 - (8*b*Sqrt[f^x]*(a + b*x))/Log[f]^2
+ (2*Sqrt[f^x]*(a + b*x)^2)/Log[f]
```

Rubi in Sympy [A] time = 7.92601, size = 54, normalized size = 0.96

$$\frac{16b^2\sqrt{f^x}}{\log(f)^3}-\frac{8b(a+bx)\sqrt{f^x}}{\log(f)^2}+\frac{2(a+bx)^2\sqrt{f^x}}{\log(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2*(f**x)**(1/2),x)
```

```
[Out] 16*b**2*sqrt(f**x)/log(f)**3 - 8*b*(a + b*x)*sqrt(f**x)/log(f)**2
 + 2*(a + b*x)**2*sqrt(f**x)/log(f)
```

Mathematica [A] time = 0.0235811, size = 41, normalized size = 0.73

$$\frac{2\sqrt{f^x}\left(\log^2(f)(a+bx)^2-4b\log(f)(a+bx)+8b^2\right)}{\log^3(f)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[f^x]*(a + b*x)^2,x]
```

```
[Out] (2*Sqrt[f^x]*(8*b^2 - 4*b*(a + b*x)*Log[f] + (a + b*x)^2*Log[f]^2
))/Log[f]^3
```

Maple [A] time = 0.012, size = 60, normalized size = 1.1

$$2\,\frac{\left(b^2x^2(\ln(f))^2+2\,(\ln(f))^2abx+(\ln(f))^2a^2-4\,\ln(f)\,b^2x-4\,\ln(f)\,ba+8\,b^2\right)\sqrt{f^x}}{(\ln(f))^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(f^x)^(1/2),x)
```

```
[Out] 2*(b^2*x^2*ln(f)^2+2*ln(f)^2*a*b*x+ln(f)^2*a^2-4*ln(f)*b^2*x-4*ln
(f)*b*a+8*b^2)*(f^x)^(1/2)/ln(f)^3
```

Maxima [A] time = 0.801437, size = 85, normalized size = 1.52

$$\frac{4\left(x\log\left(f\right)-2\right)ab\sqrt{f^{x}}}{\log\left(f\right)^{2}}+\frac{2\,a^{2}\sqrt{f^{x}}}{\log\left(f\right)}+\frac{2\,\left(x^{2}\log\left(f\right)^{2}-4\,x\log\left(f\right)+8\right)b^{2}\sqrt{f^{x}}}{\log\left(f\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(f^x),x, algorithm="maxima")
```

```
[Out] 4*(x*log(f) - 2)*a*b*sqrt(f^x)/log(f)^2 + 2*a^2*sqrt(f^x)/log(f)
+ 2*(x^2*log(f)^2 - 4*x*log(f) + 8)*b^2*sqrt(f^x)/log(f)^3
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(f^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0.164867, size = 94, normalized size = 1.68

$$\begin{cases} \frac{\left(2a^{2}\log\left(f\right)^{2}+4abx\log\left(f\right)^{2}-8ab\log\left(f\right)+2b^{2}x^{2}\log\left(f\right)^{2}-8b^{2}x\log\left(f\right)+16b^{2}\right)\sqrt{f^{x}}}{\log\left(f\right)^{3}} & \text{for}\ \log\left(f\right)^{3}\neq 0 \\ a^{2}x+abx^{2}+\frac{b^{2}x^{3}}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(f**x)**(1/2),x)
```

```
[Out] Piecewise(((2*a**2*log(f)**2 + 4*a*b*x*log(f)**2 - 8*a*b*log(f) +
 2*b**2*x**2*log(f)**2 - 8*b**2*x*log(f) + 16*b**2)*sqrt(f**x)/lo
g(f)**3, Ne(log(f)**3, 0)), (a**2*x + a*b*x**2 + b**2*x**3/3, Tru
e))
```

GIAC/XCAS [A] time = 0.24893, size = 1, normalized size = 0.02

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(f^x),x, algorithm="giac")
```

```
[Out] Done
```

3.720 $\int 3^{1+x^2} x \, dx$

Optimal. Leaf size=15

$$\frac{3^{x^2+1}}{2\log(3)}$$

```
[Out] 3^(1 + x^2)/(2*Log[3])
```

Rubi [A] time = 0.0168679, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{3^{x^2+1}}{2\log(3)}$$

Antiderivative was successfully verified.

```
[In]  Int[3^(1 + x^2)*x,x]

[Out] 3^(1 + x^2)/(2*Log[3])
```

Rubi in Sympy [A] time = 2.03353, size = 10, normalized size = 0.67

$$\frac{3^{x^2+1}}{2\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(3**(x**2+1)*x,x)

[Out] 3**(x**2 + 1)/(2*log(3))
```

Mathematica [A] time = 0.00321775, size = 12, normalized size = 0.8

$$\frac{3^{x^2+1}}{\log(9)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[3^(1 + x^2)*x,x]

[Out] 3^(1 + x^2)/Log[9]
```

Maple [A] time = 0.012, size = 14, normalized size = 0.9

$$\frac{3^{x^2+1}}{2\ln(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(3^(x^2+1)*x,x)
```

```
[Out] 1/2*3^(x^2+1)/ln(3)
```

Maxima [A] time = 0.752667, size = 18, normalized size = 1.2

$$\frac{3^{x^2+1}}{2\,\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(3^(x^2 + 1)*x,x, algorithm="maxima")
```

```
[Out] 1/2*3^(x^2 + 1)/log(3)
```

Fricas [A] time = 0.305054, size = 18, normalized size = 1.2

$$\frac{3^{x^2+1}}{2\,\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(3^(x^2 + 1)*x,x, algorithm="fricas")
```

```
[Out] 1/2*3^(x^2 + 1)/log(3)
```

Sympy [A] time = 0.078885, size = 10, normalized size = 0.67

$$\frac{3^{x^2+1}}{2\log(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(3**(x**2+1)*x,x)
```

```
[Out] 3**(x**2 + 1)/(2*log(3))
```

GIAC/XCAS [A] time = 0.227671, size = 18, normalized size = 1.2

$$\frac{3^{x^2+1}}{2\ln(3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(3^(x^2 + 1)*x,x, algorithm="giac")
```

```
[Out] 1/2*3^(x^2 + 1)/ln(3)
```

3.721 $\int \frac{2^{\sqrt{x}}}{\sqrt{x}} \, dx$

Optimal. Leaf size=14

$$\frac{2^{\sqrt{x}+1}}{\log(2)}$$

```
[Out] 2^(1 + Sqrt[x])/Log[2]
```

Rubi [A] time = 0.0190783, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2^{\sqrt{x}+1}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^Sqrt[x]/Sqrt[x],x]

[Out] 2^(1 + Sqrt[x])/Log[2]
```

Rubi in Sympy [A] time = 2.69655, size = 10, normalized size = 0.71

$$\frac{2 \cdot 2^{\sqrt{x}}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(x**(1/2))/x**(1/2),x)

[Out] 2*2**(sqrt(x))/log(2)
```

Mathematica [A] time = 0.00519812, size = 14, normalized size = 1.

$$\frac{2^{\sqrt{x}+1}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^Sqrt[x]/Sqrt[x],x]

[Out] 2^(1 + Sqrt[x])/Log[2]
```

Maple [A] time = 0.004, size = 12, normalized size = 0.9

$$2\,\frac{2^{\sqrt{x}}}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(x^(1/2))/x^(1/2),x)
```

```
[Out] 2/ln(2)*2^(x^(1/2))
```

Maxima [A] time = 0.779759, size = 16, normalized size = 1.14

$$\frac{2^{\sqrt{x}+1}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^sqrt(x)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2^(sqrt(x) + 1)/log(2)
```

Fricas [A] time = 0.276802, size = 15, normalized size = 1.07

$$\frac{2 \cdot 2^{(\sqrt{x})}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^sqrt(x)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2*2^sqrt(x)/log(2)
```

Sympy [A] time = 0.148776, size = 10, normalized size = 0.71

$$\frac{2 \cdot 2^{\sqrt{x}}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2**(x**(1/2))/x**(1/2),x)
```

```
[Out] 2*2**(sqrt(x))/log(2)
```

GIAC/XCAS [A] time = 0.22375, size = 15, normalized size = 1.07

$$\frac{2 \cdot 2^{(\sqrt{x})}}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^sqrt(x)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2*2^sqrt(x)/ln(2)
```

3.722 $\int \frac{2^{\frac{1}{x}}}{x^2} \, dx$

Optimal. Leaf size=11

$$-\frac{2^{\frac{1}{x}}}{\log(2)}$$

```
[Out] -(2^x^(-1)/Log[2])
```

Rubi [A] time = 0.0179382, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{2^{\frac{1}{x}}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^x^(-1)/x^2,x]

[Out] -(2^x^(-1)/Log[2])
```

Rubi in Sympy [A] time = 2.73971, size = 8, normalized size = 0.73

$$-\frac{2^{\frac{1}{x}}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2**(1/x)/x**2,x)

[Out] -2**(1/x)/log(2)
```

Mathematica [A] time = 0.00242643, size = 11, normalized size = 1.

$$-\frac{2^{\frac{1}{x}}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^x^(-1)/x^2,x]

[Out] -(2^x^(-1)/Log[2])
```

Maple [A] time = 0.003, size = 12, normalized size = 1.1

$$-\frac{\sqrt[x]{2}}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2^(1/x)/x^2,x)
```

```
[Out] -2^(1/x)/ln(2)
```

Maxima [A] time = 0.791896, size = 15, normalized size = 1.36

$$-\frac{2^{\left(\frac{1}{x}\right)}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2^(1/x)/x^2,x, algorithm="maxima")
```

```
[Out] -2^(1/x)/log(2)
```

Fricas [A] time = 0.256356, size = 15, normalized size = 1.36

$$-\frac{2^{\left(\frac{1}{x}\right)}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2^(1/x)/x^2,x, algorithm="fricas")
```

```
[Out] -2^(1/x)/log(2)
```

Sympy [A] time = 0.086575, size = 8, normalized size = 0.73

$$-\frac{2^{\frac{1}{x}}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2**(1/x)/x**2,x)
```

```
[Out] -2**(1/x)/log(2)
```

GIAC/XCAS [A] time = 0.224865, size = 15, normalized size = 1.36

$$-\frac{2^{\left(\frac{1}{x}\right)}}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2^(1/x)/x^2,x, algorithm="giac")
```

```
[Out] -2^(1/x)/ln(2)
```

3.723 $\int (2^{-x} + 2^x) \, dx$

Optimal. Leaf size=20

$$\frac{2^x}{\log(2)} - \frac{2^{-x}}{\log(2)}$$

```
[Out] -(1/(2^x*Log[2])) + 2^x/Log[2]
```

Rubi [A] time = 0.0129935, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2^x}{\log(2)} - \frac{2^{-x}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Int[2^(-x) + 2^x,x]

[Out] -(1/(2^x*Log[2])) + 2^x/Log[2]
```

Rubi in Sympy [A] time = 1.00278, size = 14, normalized size = 0.7

$$\frac{2^x}{\log(2)} - \frac{2^{-x}}{\log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(2**x)+2**x,x)

[Out] 2**x/log(2) - 2**(-x)/log(2)
```

Mathematica [A] time = 0.00626431, size = 20, normalized size = 1.

$$\frac{2^x}{\log(2)} - \frac{2^{-x}}{\log(2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2^(-x) + 2^x,x]

[Out] -(1/(2^x*Log[2])) + 2^x/Log[2]
```

Maple [A] time = 0.002, size = 21, normalized size = 1.1

$$-\frac{1}{2^x \ln(2)} + \frac{2^x}{\ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(2^x)+2^x,x)
```

```
[Out] -1/(2^x)/ln(2)+2^x/ln(2)
```

Maxima [A] time = 0.811416, size = 27, normalized size = 1.35

$$\frac{2^x}{\log(2)} - \frac{1}{2^x \log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x + 1/2^x,x, algorithm="maxima")
```

```
[Out] 2^x/log(2) - 1/(2^x*log(2))
```

Fricas [A] time = 0.255443, size = 23, normalized size = 1.15

$$\frac{2^{2x} - 1}{2^x \log(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x + 1/2^x,x, algorithm="fricas")
```

```
[Out] (2^(2*x) - 1)/(2^x*log(2))
```

Sympy [A] time = 0.104302, size = 17, normalized size = 0.85

$$\frac{2^x \log(2) - 2^{-x} \log(2)}{\log(2)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2**x)+2**x,x)
```

```
[Out] (2**x*log(2) - 2**(-x)*log(2))/log(2)**2
```

GIAC/XCAS [A] time = 0.229181, size = 27, normalized size = 1.35

$$\frac{2^x}{\ln(2)} - \frac{1}{2^x \ln(2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2^x + 1/2^x,x, algorithm="giac")
```

```
[Out] 2^x/ln(2) - 1/(2^x*ln(2))
```

3.724 $\int e^{-4x}\left(2-3x+x^2\right)\,dx$

Optimal. Leaf size=32

$$-\frac{1}{4}e^{-4x}x^2+\frac{5}{8}e^{-4x}x-\frac{11e^{-4x}}{32}$$

```
[Out] -11/(32*E^(4*x)) + (5*x)/(8*E^(4*x)) - x^2/(4*E^(4*x))
```

Rubi [A] time = 0.0689925, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214

$$-\frac{1}{4}e^{-4x}x^2+\frac{5}{8}e^{-4x}x-\frac{11e^{-4x}}{32}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 3*x + x^2)/E^(4*x),x]

[Out] -11/(32*E^(4*x)) + (5*x)/(8*E^(4*x)) - x^2/(4*E^(4*x))
```

Rubi in Sympy [A] time = 7.69166, size = 27, normalized size = 0.84

$$-\frac{x^2e^{-4x}}{4}+\frac{5xe^{-4x}}{8}-\frac{11e^{-4x}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((x**2-3*x+2)/exp(4*x),x)

[Out] -x**2*exp(-4*x)/4 + 5*x*exp(-4*x)/8 - 11*exp(-4*x)/32
```

Mathematica [A] time = 0.00669916, size = 19, normalized size = 0.59

$$-\frac{1}{32}e^{-4x}\left(8x^2-20x+11\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 3*x + x^2)/E^(4*x),x]

[Out] -(11 - 20*x + 8*x^2)/(32*E^(4*x))
```

Maple [A] time = 0.003, size = 19, normalized size = 0.6

$$-\frac{8\,x^2-20\,x+11}{32\,e^{4\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2-3*x+2)/exp(4*x),x)
```

```
[Out] -1/32*(8*x^2-20*x+11)/exp(4*x)
```

Maxima [A] time = 0.807135, size = 46, normalized size = 1.44

$$-\frac{1}{32}\left(8\,x^2+4\,x+1\right)e^{(-4\,x)}+\frac{3}{16}\,(4\,x+1)e^{(-4\,x)}-\frac{1}{2}\,e^{(-4\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x^2 - 3*x + 2)*e^(-4*x),x, algorithm="maxima")
```

```
[Out] -1/32*(8*x^2 + 4*x + 1)*e^(-4*x) + 3/16*(4*x + 1)*e^(-4*x) - 1/2*
e^(-4*x)
```

Fricas [A] time = 0.259155, size = 22, normalized size = 0.69

$$-\frac{1}{32}\left(8\,x^2-20\,x+11\right)e^{(-4\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x^2 - 3*x + 2)*e^(-4*x),x, algorithm="fricas")
```

```
[Out] -1/32*(8*x^2 - 20*x + 11)*e^(-4*x)
```

Sympy [A] time = 0.0753, size = 15, normalized size = 0.47

$$\frac{\left(-8x^2+20x-11\right)e^{-4x}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x**2-3*x+2)/exp(4*x),x)
```

```
[Out] (-8*x**2 + 20*x - 11)*exp(-4*x)/32
```

GIAC/XCAS [A] time = 0.226225, size = 22, normalized size = 0.69

$$-\frac{1}{32}\left(8\,x^2-20\,x+11\right)e^{(-4\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x^2 - 3*x + 2)*e^(-4*x),x, algorithm="giac")
```

```
[Out] -1/32*(8*x^2 - 20*x + 11)*e^(-4*x)
```

3.725 $\int \left(k^{x/2}+x^{\sqrt{k}}\right)\,dx$

Optimal. Leaf size=33

$$\frac{2k^{x/2}}{\log(k)}+\frac{x^{\sqrt{k}+1}}{\sqrt{k}+1}$$

```
[Out] x^(1 + Sqrt[k])/(1 + Sqrt[k]) + (2*k^(x/2))/Log[k]
```

Rubi [A] time = 0.0188467, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2k^{x/2}}{\log(k)}+\frac{x^{\sqrt{k}+1}}{\sqrt{k}+1}$$

Antiderivative was successfully verified.

```
[In]  Int[k^(x/2) + x^Sqrt[k],x]

[Out] x^(1 + Sqrt[k])/(1 + Sqrt[k]) + (2*k^(x/2))/Log[k]
```

Rubi in Sympy [A] time = 1.57341, size = 24, normalized size = 0.73

$$\frac{2k^{\frac{x}{2}}}{\log{(k)}}+\frac{x^{\sqrt{k}+1}}{\sqrt{k}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(k**(1/2*x)+x**(k**(1/2)),x)

[Out] 2*k**(x/2)/log(k) + x**(sqrt(k) + 1)/(sqrt(k) + 1)
```

Mathematica [A] time = 0.0233965, size = 33, normalized size = 1.

$$\frac{2k^{x/2}}{\log(k)}+\frac{x^{\sqrt{k}+1}}{\sqrt{k}+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[k^(x/2) + x^Sqrt[k],x]

[Out] x^(1 + Sqrt[k])/(1 + Sqrt[k]) + (2*k^(x/2))/Log[k]
```

Maple [A] time = 0.003, size = 28, normalized size = 0.9

$$2\,\frac{k^{x/2}}{\ln{(k)}}+1x^{1+\sqrt{k}}\left(1+\sqrt{k}\right)^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(k^(1/2*x)+x^(k^(1/2)),x)

[Out] 2*k^(1/2*x)/ln(k)+x^(1+k^(1/2))/(1+k^(1/2))
```

Maxima [A] time = 0.774473, size = 36, normalized size = 1.09

$$\frac{x^{\sqrt{k}+1}}{\sqrt{k}+1} + \frac{2\,k^{\frac{1}{2}\,x}}{\log\left(k\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(k^(1/2*x) + x^sqrt(k),x, algorithm="maxima")

[Out] x^(sqrt(k) + 1)/(sqrt(k) + 1) + 2*k^(1/2*x)/log(k)
```

Fricas [A] time = 0.317117, size = 46, normalized size = 1.39

$$\frac{xx^{\left(\sqrt{k}\right)}\log\left(k\right) + 2\,k^{\frac{1}{2}\,x}\left(\sqrt{k}+1\right)}{\sqrt{k}\log\left(k\right) + \log\left(k\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(k^(1/2*x) + x^sqrt(k),x, algorithm="fricas")

[Out] (x*x^sqrt(k)*log(k) + 2*k^(1/2*x)*(sqrt(k) + 1))/(sqrt(k)*log(k)
+ log(k))
```

Sympy [A] time = 0.086396, size = 36, normalized size = 1.09

$$\begin{cases} \frac{2k^{\frac{x}{2}}}{\log\left(k\right)} & \text{for}\: \log\left(k\right) \neq 0 \\ x & \text{otherwise} \end{cases} + \begin{cases} \frac{x^{\sqrt{k}+1}}{\sqrt{k}+1} & \text{for}\: \sqrt{k} \neq -1 \\ \log\left(x\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(k**(1/2*x)+x**(k**(1/2)),x)

[Out] Piecewise((2*k**(x/2)/log(k), Ne(log(k), 0)), (x, True)) + Piecew
ise((x**(sqrt(k) + 1)/(sqrt(k) + 1), Ne(sqrt(k), -1)), (log(x), T
rue))
```

GIAC/XCAS [A] time = 0.225033, size = 36, normalized size = 1.09

$$\frac{x^{\sqrt{k}+1}}{\sqrt{k}+1} + \frac{2\,k^{\frac{1}{2}\,x}}{\ln\left(k\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(k^(1/2*x) + x^sqrt(k),x, algorithm="giac")

[Out] x^(sqrt(k) + 1)/(sqrt(k) + 1) + 2*k^(1/2*x)/ln(k)
```

3.726 $\int \frac{10^{\sqrt{x}}}{\sqrt{x}} \, dx$

Optimal. Leaf size=21

$$\frac{2^{\sqrt{x}+1}5^{\sqrt{x}}}{\log(10)}$$

```
[Out] (2^(1 + Sqrt[x])*5^Sqrt[x])/Log[10]
```

Rubi [A] time = 0.0198399, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2^{\sqrt{x}+1}5^{\sqrt{x}}}{\log(10)}$$

Antiderivative was successfully verified.

```
[In]  Int[10^Sqrt[x]/Sqrt[x],x]
```

```
[Out] (2^(1 + Sqrt[x])*5^Sqrt[x])/Log[10]
```

Rubi in Sympy [A] time = 2.70117, size = 10, normalized size = 0.48

$$\frac{2 \cdot 10^{\sqrt{x}}}{\log(10)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(10**(x**(1/2))/x**(1/2),x)
```

```
[Out] 2*10**(sqrt(x))/log(10)
```

Mathematica [A] time = 0.00760728, size = 21, normalized size = 1.

$$\frac{2^{\sqrt{x}+1}5^{\sqrt{x}}}{\log(10)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[10^Sqrt[x]/Sqrt[x],x]
```

```
[Out] (2^(1 + Sqrt[x])*5^Sqrt[x])/Log[10]
```

Maple [A] time = 0.004, size = 12, normalized size = 0.6

$$2\,\frac{10^{\sqrt{x}}}{\ln(10)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(10^(x^(1/2))/x^(1/2),x)
```

```
[Out] 2/ln(10)*10^(x^(1/2))
```

Maxima [A] time = 0.790339, size = 15, normalized size = 0.71

$$\frac{2 \cdot 10^{\left(\sqrt{x}\right)}}{\log\left(10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(10^sqrt(x)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2*10^sqrt(x)/log(10)
```

Fricas [A] time = 0.39842, size = 15, normalized size = 0.71

$$\frac{2 \cdot 10^{\left(\sqrt{x}\right)}}{\log\left(10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(10^sqrt(x)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2*10^sqrt(x)/log(10)
```

Sympy [A] time = 0.151697, size = 10, normalized size = 0.48

$$\frac{2 \cdot 10^{\sqrt{x}}}{\log\left(10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(10**(x**(1/2))/x**(1/2),x)
```

```
[Out] 2*10**(sqrt(x))/log(10)
```

GIAC/XCAS [A] time = 0.22911, size = 15, normalized size = 0.71

$$\frac{2 \cdot 10^{\left(\sqrt{x}\right)}}{\ln\left(10\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(10^sqrt(x)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2*10^sqrt(x)/ln(10)
```

3.727 $\int \left(\frac{1}{\sqrt{e^x+x}}+\frac{e^x}{\sqrt{e^x+x}}\right) dx$

Optimal. Leaf size=11

$$2\sqrt{x+e^x}$$

```
[Out] 2*Sqrt[E^x + x]
```

Rubi [A] time = 0.0650065, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043

$$2\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In] Int[1/Sqrt[E^x + x] + E^x/Sqrt[E^x + x],x]

[Out] 2*Sqrt[E^x + x]
```

Rubi in Sympy [A] time = 11.8331, size = 8, normalized size = 0.73

$$2\sqrt{x+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)/(exp(x)+x)**(1/2)+1/(exp(x)+x)**(1/2),x)

[Out] 2*sqrt(x + exp(x))
```

Mathematica [A] time = 0.00707802, size = 11, normalized size = 1.

$$2\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/Sqrt[E^x + x] + E^x/Sqrt[E^x + x],x]

[Out] 2*Sqrt[E^x + x]
```

Maple [A] time = 0.032, size = 9, normalized size = 0.8

$$2\sqrt{e^x+x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(x)/(exp(x)+x)^(1/2)+1/(exp(x)+x)^(1/2),x)

[Out] 2*(exp(x)+x)^(1/2)
```

Maxima [A] time = 0.848795, size = 11, normalized size = 1.

$$2\sqrt{x+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(x + e^x) + 1/sqrt(x + e^x),x, algorithm="maxima")
```

```
[Out] 2*sqrt(x + e^x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(x + e^x) + 1/sqrt(x + e^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x+1}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(exp(x)+x)**(1/2)+1/(exp(x)+x)**(1/2),x)
```

```
[Out] Integral((exp(x) + 1)/sqrt(x + exp(x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{\sqrt{x+e^x}}+\frac{1}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/sqrt(x + e^x) + 1/sqrt(x + e^x),x, algorithm="giac")
```

```
[Out] integrate(e^x/sqrt(x + e^x) + 1/sqrt(x + e^x), x)
```

3.728 $\int \left(\frac{(1+e^x)x}{\sqrt{e^x+x}}+2\sqrt{e^x+x}\right)\,dx$

Optimal. Leaf size=12

$$2x\sqrt{x+e^x}$$

```
[Out] 2*x*Sqrt[E^x + x]
```

Rubi [A] time = 0.395136, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107

$$2x\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In]  Int[((1 + E^x)*x)/Sqrt[E^x + x] + 2*Sqrt[E^x + x],x]
```

```
[Out] 2*x*Sqrt[E^x + x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(e^x+1)}{\sqrt{x+e^x}}\,dx+2\int \sqrt{x+e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+exp(x))*x/(exp(x)+x)**(1/2)+2*(exp(x)+x)**(1/2),x)
```

```
[Out] Integral(x*(exp(x) + 1)/sqrt(x + exp(x)), x) + 2*Integral(sqrt(x
+ exp(x)), x)
```

Mathematica [A] time = 0.0250822, size = 12, normalized size = 1.

$$2x\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((1 + E^x)*x)/Sqrt[E^x + x] + 2*Sqrt[E^x + x],x]
```

```
[Out] 2*x*Sqrt[E^x + x]
```

Maple [A] time = 0.046, size = 10, normalized size = 0.8

$$2\,x\sqrt{e^x+x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+exp(x))*x/(exp(x)+x)^(1/2)+2*(exp(x)+x)^(1/2),x)
```

```
[Out] 2*x*(exp(x)+x)^(1/2)
```

Maxima [A] time = 0.827253, size = 22, normalized size = 1.83

$$\frac{2\left(x^2 + xe^x\right)}{\sqrt{x + e^x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e^x + 1)/sqrt(x + e^x) + 2*sqrt(x + e^x),x, algorithm="maxima")
```

```
[Out] 2*(x^2 + x*e^x)/sqrt(x + e^x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e^x + 1)/sqrt(x + e^x) + 2*sqrt(x + e^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x + 3x + 2e^x}{\sqrt{x + e^x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+exp(x))*x/(exp(x)+x)**(1/2)+2*(exp(x)+x)**(1/2),x)
```

```
[Out] Integral((x*exp(x) + 3*x + 2*exp(x))/sqrt(x + exp(x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x(e^x + 1)}{\sqrt{x + e^x}} + 2\sqrt{x + e^x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e^x + 1)/sqrt(x + e^x) + 2*sqrt(x + e^x),x, algorithm="giac")
```

```
[Out] integrate(x*(e^x + 1)/sqrt(x + e^x) + 2*sqrt(x + e^x), x)
```

3.729 $\int \left(\frac{x}{\sqrt{e^x+x}}+\frac{e^x x}{\sqrt{e^x+x}}+2\sqrt{e^x+x}\right)\,dx$

Optimal. Leaf size=12

$$2x\sqrt{x+e^x}$$

```
[Out] 2*x*Sqrt[E^x + x]
```

Rubi [A] time = 0.194172, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 37, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.054

$$2x\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In]  Int[x/Sqrt[E^x + x] + (E^x*x)/Sqrt[E^x + x] + 2*Sqrt[E^x + x],x]
```

```
[Out] 2*x*Sqrt[E^x + x]
```

Rubi in Sympy [A] time = 24.2479, size = 10, normalized size = 0.83

$$2x\sqrt{x+e^x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(exp(x)+x)**(1/2)+exp(x)*x/(exp(x)+x)**(1/2)+2*(exp(x)+x)**(1
```

```
[Out] 2*x*sqrt(x + exp(x))
```

Mathematica [A] time = 0.0176077, size = 12, normalized size = 1.

$$2x\sqrt{x+e^x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/Sqrt[E^x + x] + (E^x*x)/Sqrt[E^x + x] + 2*Sqrt[E^x + x],x]
```

```
[Out] 2*x*Sqrt[E^x + x]
```

Maple [A] time = 0.026, size = 10, normalized size = 0.8

$$2\,x\sqrt{e^x+x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(exp(x)+x)^(1/2)+exp(x)*x/(exp(x)+x)^(1/2)+2*(exp(x)+x)^(1/2),x)
```

```
[Out] 2*x*(exp(x)+x)^(1/2)
```

Maxima [A] time = 0.824822, size = 12, normalized size = 1.

$$2\sqrt{x+e^x}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^x/sqrt(x + e^x) + 2*sqrt(x + e^x) + x/sqrt(x + e^x),x, algorithm="ma
```

```
[Out] 2*sqrt(x + e^x)*x
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^x/sqrt(x + e^x) + 2*sqrt(x + e^x) + x/sqrt(x + e^x),x, algorithm="fr
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x + 3x + 2e^x}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(exp(x)+x)**(1/2)+exp(x)*x/(exp(x)+x)**(1/2)+2*(exp(x)+x)**(1/2),x
```

```
[Out] Integral((x*exp(x) + 3*x + 2*exp(x))/sqrt(x + exp(x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x}{\sqrt{x+e^x}} + 2\sqrt{x+e^x} + \frac{x}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*e^x/sqrt(x + e^x) + 2*sqrt(x + e^x) + x/sqrt(x + e^x),x, algorithm="gi
```

```
[Out] integrate(x*e^x/sqrt(x + e^x) + 2*sqrt(x + e^x) + x/sqrt(x + e^x)
, x)
```

3.730 $\int \frac{(1+e^x)x}{\sqrt{e^x+x}}\,dx$

Optimal. Leaf size=27

$$2x\sqrt{x+e^x}-2\text{Int}\left(\sqrt{x+e^x},x\right)$$

```
[Out] 2*x*Sqrt[E^x + x] - 2*CannotIntegrate[Sqrt[E^x + x], x]
```

Rubi [A] time = 0.282509, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{(1+e^x)\,x}{\sqrt{e^x+x}},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[((1 + E^x)*x)/Sqrt[E^x + x],x]

[Out] 2*x*Sqrt[E^x + x] - 2*Defer[Int][Sqrt[E^x + x], x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(e^x+1)}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+exp(x))*x/(exp(x)+x)**(1/2),x)

[Out] Integral(x*(exp(x) + 1)/sqrt(x + exp(x)), x)
```

Mathematica [A] time = 0.187918, size = 0, normalized size = 0.

$$\int \frac{(1+e^x)\,x}{\sqrt{e^x+x}}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[((1 + E^x)*x)/Sqrt[E^x + x],x]

[Out] Integrate[((1 + E^x)*x)/Sqrt[E^x + x], x]
```

Maple [A] time = 0.01, size = 0, normalized size = 0.

$$\int (1+e^x)\,x\frac{1}{\sqrt{e^x+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+exp(x))*x/(exp(x)+x)^(1/2),x)
```

```
[Out] int((1+exp(x))*x/(exp(x)+x)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x(e^x + 1)}{\sqrt{x + e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(e^x + 1)/sqrt(x + e^x),x, algorithm="maxima")
```

```
[Out] integrate(x*(e^x + 1)/sqrt(x + e^x), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(e^x + 1)/sqrt(x + e^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(e^x + 1\right)}{\sqrt{x + e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+exp(x))*x/(exp(x)+x)**(1/2),x)
```

```
[Out] Integral(x*(exp(x) + 1)/sqrt(x + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x(e^x + 1)}{\sqrt{x + e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(e^x + 1)/sqrt(x + e^x),x, algorithm="giac")
```

```
[Out] integrate(x*(e^x + 1)/sqrt(x + e^x), x)
```

3.731 $\int \left(\frac{x}{\sqrt{e^x+x}} + \frac{e^x x}{\sqrt{e^x+x}} \right) dx$

Optimal. Leaf size=27

$$2x\sqrt{x+e^x} - 2\text{Int}\left(\sqrt{x+e^x}, x\right)$$

```
[Out] 2*x*Sqrt[E^x + x] - 2*CannotIntegrate[Sqrt[E^x + x], x]
```

Rubi [A] time = 0.179052, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{x}{\sqrt{e^x+x}} + \frac{e^x x}{\sqrt{e^x+x}}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[x/Sqrt[E^x + x] + (E^x*x)/Sqrt[E^x + x],x]

[Out] 2*x*Sqrt[E^x + x] - 2*Defer[Int][Sqrt[E^x + x], x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$2x\sqrt{x+e^x} - 2\int \sqrt{x+e^x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(exp(x)+x)**(1/2)+exp(x)*x/(exp(x)+x)**(1/2),x)

[Out] 2*x*sqrt(x + exp(x)) - 2*Integral(sqrt(x + exp(x)), x)
```

Mathematica [A] time = 0.0919318, size = 0, normalized size = 0.

$$\int \left(\frac{x}{\sqrt{e^x+x}} + \frac{e^x x}{\sqrt{e^x+x}}\right) dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[x/Sqrt[E^x + x] + (E^x*x)/Sqrt[E^x + x],x]

[Out] Integrate[x/Sqrt[E^x + x] + (E^x*x)/Sqrt[E^x + x], x]
```

Maple [A] time = 0.011, size = 0, normalized size = 0.

$$\int x \frac{1}{\sqrt{e^x+x}} + x e^x \frac{1}{\sqrt{e^x+x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(exp(x)+x)^(1/2)+exp(x)*x/(exp(x)+x)^(1/2),x)
```

```
[Out] int(x/(exp(x)+x)^(1/2)+exp(x)*x/(exp(x)+x)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x}{\sqrt{x+e^x}} + \frac{x}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^x/sqrt(x + e^x) + x/sqrt(x + e^x),x, algorithm="maxima")
```

```
[Out] integrate(x*e^x/sqrt(x + e^x) + x/sqrt(x + e^x), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^x/sqrt(x + e^x) + x/sqrt(x + e^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(e^x+1\right)}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(exp(x)+x)**(1/2)+exp(x)*x/(exp(x)+x)**(1/2),x)
```

```
[Out] Integral(x*(exp(x) + 1)/sqrt(x + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x}{\sqrt{x+e^x}} + \frac{x}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^x/sqrt(x + e^x) + x/sqrt(x + e^x),x, algorithm="giac")
```

```
[Out] integrate(x*e^x/sqrt(x + e^x) + x/sqrt(x + e^x), x)
```

3.732 $\int \frac{e^x x}{\sqrt{e^x+x}}\,dx$

Optimal. Leaf size=52

$$-\mathrm{Int}\left(\frac{1}{\sqrt{x+e^x}},x\right)-3\mathrm{Int}\left(\sqrt{x+e^x},x\right)+2\sqrt{x+e^x}\,x+2\sqrt{x+e^x}$$

```
[Out] 2*Sqrt[E^x + x] + 2*x*Sqrt[E^x + x] - CannotIntegrate[1/Sqrt[E^x
+ x], x] - 3*CannotIntegrate[Sqrt[E^x + x], x]
```

Rubi [A] time = 0.124444, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\mathrm{Int}\left(\frac{e^x x}{\sqrt{e^x+x}},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[(E^x*x)/Sqrt[E^x + x],x]
```

```
[Out] 2*Sqrt[E^x + x] + 2*x*Sqrt[E^x + x] - Defer[Int][1/Sqrt[E^x + x],
 x] - 3*Defer[Int][Sqrt[E^x + x], x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$2x\sqrt{x+e^x}+2\sqrt{x+e^x}-\int\frac{1}{\sqrt{x+e^x}}\,dx-3\int\sqrt{x+e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)*x/(exp(x)+x)**(1/2),x)
```

```
[Out] 2*x*sqrt(x + exp(x)) + 2*sqrt(x + exp(x)) - Integral(1/sqrt(x + e
xp(x)), x) - 3*Integral(sqrt(x + exp(x)), x)
```

Mathematica [A] time = 0.119238, size = 0, normalized size = 0.

$$\int\frac{e^x x}{\sqrt{e^x+x}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(E^x*x)/Sqrt[E^x + x],x]
```

```
[Out] Integrate[(E^x*x)/Sqrt[E^x + x], x]
```

Maple [A] time = 0.014, size = 0, normalized size = 0.

$$\int xe^x\frac{1}{\sqrt{e^x+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*x/(exp(x)+x)^(1/2),x)

[Out] int(exp(x)*x/(exp(x)+x)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x}{\sqrt{x + e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^x/sqrt(x + e^x),x, algorithm="maxima")

[Out] integrate(x*e^x/sqrt(x + e^x), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^x/sqrt(x + e^x),x, algorithm="fricas")

[Out] Exception raised: TypeError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x}{\sqrt{x + e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*x/(exp(x)+x)**(1/2),x)

[Out] Integral(x*exp(x)/sqrt(x + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{xe^x}{\sqrt{x + e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^x/sqrt(x + e^x),x, algorithm="giac")

[Out] integrate(x*e^x/sqrt(x + e^x), x)
```

3.733 $\int \left(\frac{x^2(5e^x+3x^2)}{5\sqrt{5e^x+x^3}}+\frac{4}{5}x\sqrt{5e^x+x^3}\right) dx$

Optimal. Leaf size=20

$$\frac{2}{5}x^2\sqrt{x^3+5e^x}$$

```
[Out] (2*x^2*Sqrt[5*E^x + x^3])/5
```

Rubi [A] time = 0.943667, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 50, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.04

$$\frac{2}{5}x^2\sqrt{x^3+5e^x}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(5*E^x + 3*x^2))/(5*Sqrt[5*E^x + x^3]) + (4*x*Sqrt[5*E^x + x^3])/5,x]

[Out] (2*x^2*Sqrt[5*E^x + x^3])/5
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/5*x**2*(5*exp(x)+3*x**2)/(5*exp(x)+x**3)**(1/2)+4/5*x*(5*exp(

[Out] Timed out
```

Mathematica [A] time = 0.0462046, size = 20, normalized size = 1.

$$\frac{2}{5}x^2\sqrt{x^3+5e^x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(5*E^x + 3*x^2))/(5*Sqrt[5*E^x + x^3]) + (4*x*Sqrt[5*E^x + x^3])/5

[Out] (2*x^2*Sqrt[5*E^x + x^3])/5
```

Maple [A] time = 0.05, size = 16, normalized size = 0.8

$$\frac{2x^2}{5}\sqrt{5\,e^x+x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/5*x^2*(5*exp(x)+3*x^2)/(5*exp(x)+x^3)^(1/2)+4/5*x*(5*exp(x)+x^3)^(1/2),x
```

```
[Out] 2/5*x^2*(5*exp(x)+x^3)^(1/2)
```

Maxima [A] time = 0.920601, size = 31, normalized size = 1.55

$$\frac{2\left(x^5 + 5\,x^2 e^x\right)}{5\,\sqrt{x^3 + 5\,e^x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/5*(3*x^2 + 5*e^x)*x^2/sqrt(x^3 + 5*e^x) + 4/5*sqrt(x^3 + 5*e^x)*x,x,
```

```
[Out] 2/5*(x^5 + 5*x^2*e^x)/sqrt(x^3 + 5*e^x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/5*(3*x^2 + 5*e^x)*x^2/sqrt(x^3 + 5*e^x) + 4/5*sqrt(x^3 + 5*e^x)*x,x,
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \frac{7x^4}{\sqrt{x^3+5e^x}}\,dx + \int \frac{20xe^x}{\sqrt{x^3+5e^x}}\,dx + \int \frac{5x^2e^x}{\sqrt{x^3+5e^x}}\,dx}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/5*x**2*(5*exp(x)+3*x**2)/(5*exp(x)+x**3)**(1/2)+4/5*x*(5*exp(x)+x*
```

```
[Out] (Integral(7*x**4/sqrt(x**3 + 5*exp(x)), x) + Integral(20*x*exp(x)
/sqrt(x**3 + 5*exp(x)), x) + Integral(5*x**2*exp(x)/sqrt(x**3 + 5
*exp(x)), x))/5
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(3\,x^2 + 5\,e^x\right)x^2}{5\,\sqrt{x^3 + 5\,e^x}} + \frac{4}{5}\,\sqrt{x^3 + 5\,e^x}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/5*(3*x^2 + 5*e^x)*x^2/sqrt(x^3 + 5*e^x) + 4/5*sqrt(x^3 + 5*e^x)*x,x,
```

```
[Out] integrate(1/5*(3*x^2 + 5*e^x)*x^2/sqrt(x^3 + 5*e^x) + 4/5*sqrt(x^
3 + 5*e^x)*x, x)
```

3.734 $\int \frac{e^x x^2}{\sqrt{5e^x+x^3}} dx$

Optimal. Leaf size=67

$$-\frac{4}{5}\text{Int}\left(x\sqrt{x^3+5e^x},x\right)-\frac{3}{5}\text{Int}\left(\frac{x^4}{\sqrt{x^3+5e^x}},x\right)+\frac{2}{5}\sqrt{x^3+5e^x}x^2$$

```
[Out] (2*x^2*Sqrt[5*E^x + x^3])/5 - (3*CannotIntegrate[x^4/Sqrt[5*E^x +
 x^3], x])/5 - (4*CannotIntegrate[x*Sqrt[5*E^x + x^3], x])/5
```

Rubi [A] time = 0.2604, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{e^x x^2}{\sqrt{5e^x+x^3}},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[(E^x*x^2)/Sqrt[5*E^x + x^3],x]
```

```
[Out] (2*x^2*Sqrt[5*E^x + x^3])/5 - (3*Defer[Int][x^4/Sqrt[5*E^x + x^3]
, x])/5 - (4*Defer[Int][x*Sqrt[5*E^x + x^3], x])/5
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\frac{2x^2\sqrt{x^3+5e^x}}{5}-\frac{4\int x\sqrt{x^3+5e^x}\,dx}{5}-\frac{3\int\frac{x^4}{\sqrt{x^3+5e^x}}\,dx}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(exp(x)*x**2/(5*exp(x)+x**3)**(1/2),x)
```

```
[Out] 2*x**2*sqrt(x**3 + 5*exp(x))/5 - 4*Integral(x*sqrt(x**3 + 5*exp(x
)), x)/5 - 3*Integral(x**4/sqrt(x**3 + 5*exp(x)), x)/5
```

Mathematica [A] time = 0.20717, size = 0, normalized size = 0.

$$\int \frac{e^x x^2}{\sqrt{5e^x+x^3}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(E^x*x^2)/Sqrt[5*E^x + x^3],x]
```

```
[Out] Integrate[(E^x*x^2)/Sqrt[5*E^x + x^3], x]
```

Maple [A] time = 0.029, size = 0, normalized size = 0.

$$\int e^x x^2 \frac{1}{\sqrt{5\,e^x+x^3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*x^2/(5*exp(x)+x^3)^(1/2),x)
```

```
[Out] int(exp(x)*x^2/(5*exp(x)+x^3)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 e^x}{\sqrt{x^3 + 5\,e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^x/sqrt(x^3 + 5*e^x),x, algorithm="maxima")
```

```
[Out] integrate(x^2*e^x/sqrt(x^3 + 5*e^x), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^x/sqrt(x^3 + 5*e^x),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 e^x}{\sqrt{x^3 + 5e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*x**2/(5*exp(x)+x**3)**(1/2),x)
```

```
[Out] Integral(x**2*exp(x)/sqrt(x**3 + 5*exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 e^x}{\sqrt{x^3 + 5\,e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2*e^x/sqrt(x^3 + 5*e^x),x, algorithm="giac")
```

```
[Out] integrate(x^2*e^x/sqrt(x^3 + 5*e^x), x)
```

3.735 $\int -\frac{1+e^x}{\sqrt[3]{e^x+x}} \, dx$

Optimal. Leaf size=13

$$-\frac{3}{2} (x+e^x)^{2/3}$$

```
[Out] (-3*(E^x + x)^(2/3))/2
```

Rubi [A] time = 0.0414829, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$

$$-\frac{3}{2} (x+e^x)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Int[-((1 + E^x)/(E^x + x)^(1/3)),x]

[Out] (-3*(E^x + x)^(2/3))/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{-e^x-1}{\sqrt[3]{x+e^x}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-1-exp(x))/(exp(x)+x)**(1/3),x)

[Out] Integral((-exp(x) - 1)/(x + exp(x))**(1/3), x)
```

Mathematica [A] time = 0.00918479, size = 13, normalized size = 1.

$$-\frac{3}{2} (x+e^x)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[-((1 + E^x)/(E^x + x)^(1/3)),x]

[Out] (-3*(E^x + x)^(2/3))/2
```

Maple [A] time = 0.015, size = 9, normalized size = 0.7

$$-\frac{3}{2} (e^x+x)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-1-exp(x))/(exp(x)+x)^(1/3),x)
```

```
[Out] -3/2*(exp(x)+x)^(2/3)
```

Maxima [A] time = 0.747994, size = 11, normalized size = 0.85

$$-\frac{3}{2}\,(x+e^{x})^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^x + 1)/(x + e^x)^(1/3),x, algorithm="maxima")
```

```
[Out] -3/2*(x + e^x)^(2/3)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^x + 1)/(x + e^x)^(1/3),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [A] time = 0.264623, size = 12, normalized size = 0.92

$$-\frac{3\,(x+e^{x})^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-1-exp(x))/(exp(x)+x)**(1/3),x)
```

```
[Out] -3*(x + exp(x))**(2/3)/2
```

GIAC/XCAS [A] time = 0.23143, size = 11, normalized size = 0.85

$$-\frac{3}{2}\,(x+e^{x})^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^x + 1)/(x + e^x)^(1/3),x, algorithm="giac")
```

```
[Out] -3/2*(x + e^x)^(2/3)
```

3.736 $\int \left(-\frac{1}{\sqrt[3]{e^x+x}}+\frac{x}{\sqrt[3]{e^x+x}}-(e^x+x)^{2/3}\right)\,dx$

Optimal. Leaf size=13

$$-\frac{3}{2}(x+e^x)^{2/3}$$

```
[Out] (-3*(E^x + x)^(2/3))/2
```

Rubi [A] time = 0.097032, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.029

$$-\frac{3}{2}(x+e^x)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Int[-(E^x + x)^(-1/3) + x/(E^x + x)^(1/3) - (E^x + x)^(2/3),x]

[Out] (-3*(E^x + x)^(2/3))/2
```

Rubi in Sympy [A] time = 16.913, size = 12, normalized size = 0.92

$$-\frac{3(x+e^x)^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(-1/(exp(x)+x)**(1/3)+x/(exp(x)+x)**(1/3)-(exp(x)+x)**(2/3),x)

[Out] -3*(x + exp(x))**(2/3)/2
```

Mathematica [A] time = 0.00512517, size = 13, normalized size = 1.

$$-\frac{3}{2}(x+e^x)^{2/3}$$

Antiderivative was successfully verified.

```
[In] Integrate[-(E^x + x)^(-1/3) + x/(E^x + x)^(1/3) - (E^x + x)^(2/3),x]

[Out] (-3*(E^x + x)^(2/3))/2
```

Maple [A] time = 0.033, size = 9, normalized size = 0.7

$$-\frac{3}{2}(e^x+x)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-1/(exp(x)+x)^(1/3)+x/(exp(x)+x)^(1/3)-(exp(x)+x)^(2/3),x)
```

```
[Out] -3/2*(exp(x)+x)^(2/3)
```

Maxima [A] time = 0.92526, size = 11, normalized size = 0.85

$$-\frac{3}{2}(x+e^x)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(x + e^x)^(2/3) + x/(x + e^x)^(1/3) - 1/(x + e^x)^(1/3),x, algorithm="m
```

```
[Out] -3/2*(x + e^x)^(2/3)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(x + e^x)^(2/3) + x/(x + e^x)^(1/3) - 1/(x + e^x)^(1/3),x, algorithm="f
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\int \frac{e^x}{\sqrt[3]{x+e^x}}\,dx-\int \frac{1}{\sqrt[3]{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-1/(exp(x)+x)**(1/3)+x/(exp(x)+x)**(1/3)-(exp(x)+x)**(2/3),x)
```

```
[Out] -Integral(exp(x)/(x + exp(x))**(1/3), x) - Integral((x + exp(x))*
*(-1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int -(x+e^x)^{\frac{2}{3}}+\frac{x}{(x+e^x)^{\frac{1}{3}}}-\frac{1}{(x+e^x)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(x + e^x)^(2/3) + x/(x + e^x)^(1/3) - 1/(x + e^x)^(1/3),x, algorithm="g
```

```
[Out] integrate(-(x + e^x)^(2/3) + x/(x + e^x)^(1/3) - 1/(x + e^x)^(1/3
), x)
```

3.737 $\int \frac{x}{\sqrt[3]{e^x+x}}\,dx$

Optimal. Leaf size=38

$$\text{Int}\left(\frac{1}{\sqrt[3]{x+e^x}},x\right)+\text{Int}\left(\left(x+e^x\right)^{2/3},x\right)-\frac{3}{2}\left(x+e^x\right)^{2/3}$$

```
[Out] (-3*(E^x + x)^(2/3))/2 + CannotIntegrate[(E^x + x)^(-1/3), x] + C
annotIntegrate[(E^x + x)^(2/3), x]
```

Rubi [A] time = 0.0619465, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{x}{\sqrt[3]{e^x+x}},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[x/(E^x + x)^(1/3),x]
```

```
[Out] (-3*(E^x + x)^(2/3))/2 + Defer[Int][(E^x + x)^(-1/3), x] + Defer[
Int][(E^x + x)^(2/3), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$-\frac{3\left(x+e^x\right)^{\frac{2}{3}}}{2}+\int\frac{1}{\sqrt[3]{x+e^x}}\,dx+\int\left(x+e^x\right)^{\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x/(exp(x)+x)**(1/3),x)
```

```
[Out] -3*(x + exp(x))**(2/3)/2 + Integral((x + exp(x))**(-1/3), x) + In
tegral((x + exp(x))**(2/3), x)
```

Mathematica [A] time = 0.0617154, size = 0, normalized size = 0.

$$\int\frac{x}{\sqrt[3]{e^x+x}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x/(E^x + x)^(1/3),x]
```

```
[Out] Integrate[x/(E^x + x)^(1/3), x]
```

Maple [A] time = 0.003, size = 0, normalized size = 0.

$$\int x\frac{1}{\sqrt[3]{e^x+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(exp(x)+x)^(1/3),x)

[Out] int(x/(exp(x)+x)^(1/3),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(x+e^x)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(x + e^x)^(1/3),x, algorithm="maxima")

[Out] integrate(x/(x + e^x)^(1/3), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(x + e^x)^(1/3),x, algorithm="fricas")

[Out] Exception raised: TypeError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt[3]{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(exp(x)+x)**(1/3),x)

[Out] Integral(x/(x + exp(x))**(1/3), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(x+e^x)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(x + e^x)^(1/3),x, algorithm="giac")

[Out] integrate(x/(x + e^x)^(1/3), x)
```

3.738 $\int \frac{5x+e^x(3+2x)}{\sqrt[3]{e^x+x}}\,dx$

Optimal. Leaf size=12

$$3x\left(x+e^x\right)^{2/3}$$

```
[Out] 3*x*(E^x + x)^(2/3)
```

Rubi [A] time = 0.50272, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$

$$3x\left(x+e^x\right)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(5*x + E^x*(3 + 2*x))/(E^x + x)^(1/3),x]
```

```
[Out] 3*x*(E^x + x)^(2/3)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{5x+(2x+3)\,e^x}{\sqrt[3]{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((5*x+exp(x)*(3+2*x))/(exp(x)+x)**(1/3),x)
```

```
[Out] Integral((5*x + (2*x + 3)*exp(x))/(x + exp(x))**(1/3), x)
```

Mathematica [A] time = 0.0249667, size = 12, normalized size = 1.

$$3x\left(x+e^x\right)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(5*x + E^x*(3 + 2*x))/(E^x + x)^(1/3),x]
```

```
[Out] 3*x*(E^x + x)^(2/3)
```

Maple [A] time = 0.014, size = 10, normalized size = 0.8

$$3\,x\left(e^x+x\right)^{2/3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((5*x+exp(x)*(3+2*x))/(exp(x)+x)^(1/3),x)
```

```
[Out] 3*x*(exp(x)+x)^(2/3)
```

Maxima [A] time = 0.82782, size = 22, normalized size = 1.83

$$\frac{3\left(x^2 + xe^x\right)}{(x + e^x)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((2*x + 3)*e^x + 5*x)/(x + e^x)^(1/3),x, algorithm="maxima")
```

```
[Out] 3*(x^2 + x*e^x)/(x + e^x)^(1/3)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((2*x + 3)*e^x + 5*x)/(x + e^x)^(1/3),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2xe^x + 5x + 3e^x}{\sqrt[3]{x + e^x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((5*x+exp(x)*(3+2*x))/(exp(x)+x)**(1/3),x)
```

```
[Out] Integral((2*x*exp(x) + 5*x + 3*exp(x))/(x + exp(x))**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(2\,x + 3)e^x + 5\,x}{(x + e^x)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((2*x + 3)*e^x + 5*x)/(x + e^x)^(1/3),x, algorithm="giac")
```

```
[Out] integrate(((2*x + 3)*e^x + 5*x)/(x + e^x)^(1/3), x)
```

3.739 $\int \left(\frac{2x}{\sqrt[3]{e^x + x}} + \frac{2e^x x}{\sqrt[3]{e^x + x}} + 3(e^x + x)^{2/3} \right) dx$

Optimal. Leaf size=12

$$3x(x + e^x)^{2/3}$$

```
[Out] 3*x*(E^x + x)^(2/3)
```

Rubi [A] time = 0.204359, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 39, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.051

$$3x(x + e^x)^{2/3}$$

Antiderivative was successfully verified.

```
[In] Int[(2*x)/(E^x + x)^(1/3) + (2*E^x*x)/(E^x + x)^(1/3) + 3*(E^x + x)^(2/3),x]
```

```
[Out] 3*x*(E^x + x)^(2/3)
```

Rubi in Sympy [A] time = 22.6456, size = 10, normalized size = 0.83

$$3x(x + e^x)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(2*x/(exp(x)+x)**(1/3)+2*exp(x)*x/(exp(x)+x)**(1/3)+3*(exp(x)+x)
```

```
[Out] 3*x*(x + exp(x))**(2/3)
```

Mathematica [A] time = 0.0198245, size = 12, normalized size = 1.

$$3x(x + e^x)^{2/3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2*x)/(E^x + x)^(1/3) + (2*E^x*x)/(E^x + x)^(1/3) + 3*(E^x + x)^(2/3),x
```

```
[Out] 3*x*(E^x + x)^(2/3)
```

Maple [A] time = 0.035, size = 10, normalized size = 0.8

$$3x(e^x + x)^{2/3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(2*x/(exp(x)+x)^(1/3)+2*exp(x)*x/(exp(x)+x)^(1/3)+3*(exp(x)+x)^(2/3),x)
```

```
[Out] 3*x*(exp(x)+x)^(2/3)
```

Maxima [A] time = 0.822156, size = 22, normalized size = 1.83

$$\frac{3\left(x^2 + xe^x\right)}{(x + e^x)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*x*e^x/(x + e^x)^(1/3) + 3*(x + e^x)^(2/3) + 2*x/(x + e^x)^(1/3),x, alg
```

```
[Out] 3*(x^2 + x*e^x)/(x + e^x)^(1/3)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*x*e^x/(x + e^x)^(1/3) + 3*(x + e^x)^(2/3) + 2*x/(x + e^x)^(1/3),x, alg
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2xe^x + 5x + 3e^x}{\sqrt[3]{x + e^x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*x/(exp(x)+x)**(1/3)+2*exp(x)*x/(exp(x)+x)**(1/3)+3*(exp(x)+x)**(2/
```

```
[Out] Integral((2*x*exp(x) + 5*x + 3*exp(x))/(x + exp(x))**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{2\,xe^x}{(x + e^x)^{\frac{1}{3}}} + 3\,(x + e^x)^{\frac{2}{3}} + \frac{2\,x}{(x + e^x)^{\frac{1}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*x*e^x/(x + e^x)^(1/3) + 3*(x + e^x)^(2/3) + 2*x/(x + e^x)^(1/3),x, alg
```

```
[Out] integrate(2*x*e^x/(x + e^x)^(1/3) + 3*(x + e^x)^(2/3) + 2*x/(x +
e^x)^(1/3), x)
```

3.740 $\int e^x\left(-e^{-x}+e^x\right)\left(e^{-x}+e^x\right)^2\,dx$

Optimal. Leaf size=31

$$-x+\frac{e^{-2x}}{2}+\frac{e^{2x}}{2}+\frac{e^{4x}}{4}$$

```
[Out] 1/(2*E^(2*x)) + E^(2*x)/2 + E^(4*x)/4 - x
```

Rubi [A] time = 0.0775879, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-x+\frac{e^{-2x}}{2}+\frac{e^{2x}}{2}+\frac{e^{4x}}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x*(-E^(-x) + E^x)*(E^(-x) + E^x)^2,x]
```

```
[Out] 1/(2*E^(2*x)) + E^(2*x)/2 + E^(4*x)/4 - x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{e^{2x}}{2}-\frac{\log\left(e^{2x}\right)}{2}+\frac{\int^{e^{2x}}x\,dx}{2}+\frac{e^{-2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)*(-1/exp(x)+exp(x))*(exp(-x)+exp(x))**2,x)
```

```
[Out] exp(2*x)/2 - log(exp(2*x))/2 + Integral(x, (x, exp(2*x)))/2 + exp
(-2*x)/2
```

Mathematica [A] time = 0.0133372, size = 31, normalized size = 1.

$$-x+\frac{e^{-2x}}{2}+\frac{e^{2x}}{2}+\frac{e^{4x}}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x*(-E^(-x) + E^x)*(E^(-x) + E^x)^2,x]
```

```
[Out] 1/(2*E^(2*x)) + E^(2*x)/2 + E^(4*x)/4 - x
```

Maple [A] time = 0.004, size = 23, normalized size = 0.7

$$-x+\frac{\left(e^x\right)^2}{2}+\frac{\left(e^x\right)^4}{4}+\frac{1}{2\left(e^x\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)*(-1/exp(x)+exp(x))*(exp(-x)+exp(x))^2,x)
```

```
[Out] -x+1/2*exp(x)^2+1/4*exp(x)^4+1/2/exp(x)^2
```

Maxima [A] time = 0.845173, size = 32, normalized size = 1.03

$$\frac{1}{4}\left(2e^{(-2x)}+1\right)e^{(4x)}-x+\frac{1}{2}e^{(-2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(e^(-x) + e^x)^2*(e^(-x) - e^x)*e^x,x, algorithm="maxima")
```

```
[Out] 1/4*(2*e^(-2*x) + 1)*e^(4*x) - x + 1/2*e^(-2*x)
```

Fricas [A] time = 0.299501, size = 36, normalized size = 1.16

$$-\frac{1}{4}\left(4xe^{(2x)}-e^{(6x)}-2e^{(4x)}-2\right)e^{(-2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(e^(-x) + e^x)^2*(e^(-x) - e^x)*e^x,x, algorithm="fricas")
```

```
[Out] -1/4*(4*x*e^(2*x) - e^(6*x) - 2*e^(4*x) - 2)*e^(-2*x)
```

Sympy [A] time = 0.121454, size = 22, normalized size = 0.71

$$-x+\frac{e^{4x}}{4}+\frac{e^{2x}}{2}+\frac{e^{-2x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)*(-1/exp(x)+exp(x))*(exp(-x)+exp(x))**2,x)
```

```
[Out] -x + exp(4*x)/4 + exp(2*x)/2 + exp(-2*x)/2
```

GIAC/XCAS [A] time = 0.227235, size = 38, normalized size = 1.23

$$\frac{1}{2}\left(e^{(2x)}+1\right)e^{(-2x)}-x+\frac{1}{4}e^{(4x)}+\frac{1}{2}e^{(2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(e^(-x) + e^x)^2*(e^(-x) - e^x)*e^x,x, algorithm="giac")
```

```
[Out] 1/2*(e^(2*x) + 1)*e^(-2*x) - x + 1/4*e^(4*x) + 1/2*e^(2*x)
```

3.741 $\int \frac{x}{e^x+x} \, dx$

Optimal. Leaf size=12

$$\text{Int}\left(\frac{x}{x+e^x},x\right)$$

```
[Out] CannotIntegrate[x/(E^x + x), x]
```

Rubi [A] time = 0.0451669, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{x}{e^x+x},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[x/(E^x + x),x]
```

```
[Out] Defer[Int][x/(E^x + x), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{x+e^x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x/(exp(x)+x),x)
```

```
[Out] Integral(x/(x + exp(x)), x)
```

Mathematica [A] time = 2.85606, size = 0, normalized size = 0.

$$\int \frac{x}{e^x+x} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x/(E^x + x),x]
```

```
[Out] Integrate[x/(E^x + x), x]
```

Maple [A] time = 0.015, size = 0, normalized size = 0.

$$\int \frac{x}{e^x+x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(exp(x)+x),x)
```

```
[Out] int(x/(exp(x)+x),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{x+e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(x + e^x),x, algorithm="maxima")
```

```
[Out] integrate(x/(x + e^x), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x}{x+e^x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(x + e^x),x, algorithm="fricas")
```

```
[Out] integral(x/(x + e^x), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{x+e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(exp(x)+x),x)
```

```
[Out] Integral(x/(x + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{x+e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(x + e^x),x, algorithm="giac")
```

```
[Out] integrate(x/(x + e^x), x)
```

3.742 $\int \frac{x^2}{\sqrt{e^x+x}}\,dx$

Optimal. Leaf size=16

$$\text{Int}\left(\frac{x^2}{\sqrt{x+e^x}},x\right)$$

```
[Out] CannotIntegrate[x^2/Sqrt[E^x + x], x]
```

Rubi [A] time = 0.0904138, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{x^2}{\sqrt{e^x+x}},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[x^2/Sqrt[E^x + x],x]
```

```
[Out] Defer[Int][x^2/Sqrt[E^x + x], x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2/(exp(x)+x)**(1/2),x)
```

```
[Out] Integral(x**2/sqrt(x + exp(x)), x)
```

Mathematica [A] time = 0.0576462, size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{e^x+x}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^2/Sqrt[E^x + x],x]
```

```
[Out] Integrate[x^2/Sqrt[E^x + x], x]
```

Maple [A] time = 0.014, size = 0, normalized size = 0.

$$\int x^2\frac{1}{\sqrt{e^x+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(exp(x)+x)^(1/2),x)
```

```
[Out] int(x^2/(exp(x)+x)^(1/2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/sqrt(x + e^x),x, algorithm="maxima")

[Out] integrate(x^2/sqrt(x + e^x), x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/sqrt(x + e^x),x, algorithm="fricas")

[Out] Exception raised: TypeError
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(exp(x)+x)**(1/2),x)

[Out] Integral(x**2/sqrt(x + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{x+e^x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/sqrt(x + e^x),x, algorithm="giac")

[Out] integrate(x^2/sqrt(x + e^x), x)
```

3.743 $\int \frac{e^x}{e^x+x} \, dx$

Optimal. Leaf size=14

$$\text{Int}\left(\frac{e^x}{x+e^x},x\right)$$

```
[Out] CannotIntegrate[E^x/(E^x + x), x]
```

Rubi [A] time = 0.0516472, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\text{Int}\left(\frac{e^x}{e^x+x},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^x/(E^x + x),x]
```

```
[Out] Defer[Int][E^x/(E^x + x), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{x+e^x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(exp(x)+x),x)
```

```
[Out] Integral(exp(x)/(x + exp(x)), x)
```

Mathematica [A] time = 0.0186384, size = 0, normalized size = 0.

$$\int \frac{e^x}{e^x+x} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^x/(E^x + x),x]
```

```
[Out] Integrate[E^x/(E^x + x), x]
```

Maple [A] time = 0.016, size = 0, normalized size = 0.

$$\int \frac{e^x}{e^x+x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(exp(x)+x),x)
```

```
[Out] int(exp(x)/(exp(x)+x),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$x - \int \frac{x}{x + e^x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(x + e^x),x, algorithm="maxima")
```

```
[Out] x - integrate(x/(x + e^x), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^x}{x + e^x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(x + e^x),x, algorithm="fricas")
```

```
[Out] integral(e^x/(x + e^x), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{x + e^x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(exp(x)+x),x)
```

```
[Out] Integral(exp(x)/(x + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{x + e^x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(x + e^x),x, algorithm="giac")
```

```
[Out] integrate(e^x/(x + e^x), x)
```

3.744 $\int \frac{e^x}{e^x+x^2} \, dx$

Optimal. Leaf size=16

$$\text{Int}\left(\frac{e^x}{x^2+e^x},x\right)$$

```
[Out] CannotIntegrate[E^x/(E^x + x^2), x]
```

Rubi [A] time = 0.0622543, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{e^x}{e^x+x^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[E^x/(E^x + x^2),x]
```

```
[Out] Defer[Int][E^x/(E^x + x^2), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{x^2+e^x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x)/(exp(x)+x**2),x)
```

```
[Out] Integral(exp(x)/(x**2 + exp(x)), x)
```

Mathematica [A] time = 0.0318796, size = 0, normalized size = 0.

$$\int \frac{e^x}{e^x+x^2} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^x/(E^x + x^2),x]
```

```
[Out] Integrate[E^x/(E^x + x^2), x]
```

Maple [A] time = 0.02, size = 0, normalized size = 0.

$$\int \frac{e^x}{e^x+x^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x)/(exp(x)+x^2),x)
```

```
[Out] int(exp(x)/(exp(x)+x^2),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$x - \int \frac{x^2}{x^2 + e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(x^2 + e^x),x, algorithm="maxima")
```

```
[Out] x - integrate(x^2/(x^2 + e^x), x)
```

Fricas [A] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{e^x}{x^2 + e^x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(x^2 + e^x),x, algorithm="fricas")
```

```
[Out] integral(e^x/(x^2 + e^x), x)
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{x^2 + e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x)/(exp(x)+x**2),x)
```

```
[Out] Integral(exp(x)/(x**2 + exp(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{e^x}{x^2 + e^x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^x/(x^2 + e^x),x, algorithm="giac")
```

```
[Out] integrate(e^x/(x^2 + e^x), x)
```

3.745 $\int \frac{f(x)}{x+f(x)} dx$

Optimal. Leaf size=15

$$x - \text{Int}\left(\frac{x}{f(x)+x}, x\right)$$

```
[Out] x - CannotIntegrate[x/(x + f[x]), x]
```

Rubi [A] time = 0.0689311, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{f(x)}{x+f(x)}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f[x]/(x + f[x]),x]
```

```
[Out] x - Defer[Int][x/(x + f[x]), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{x+F_0(x)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F0(x)/(x+F0(x)),x)
```

```
[Out] Integral(F0(x)/(x + F0(x)), x)
```

Mathematica [A] time = 0.0378735, size = 0, normalized size = 0.

$$\int \frac{f(x)}{x+f(x)} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f[x]/(x + f[x]),x]
```

```
[Out] Integrate[f[x]/(x + f[x]), x]
```

Maple [A] time = 0.005, size = 0, normalized size = 0.

$$\int \frac{f(x)}{x+f(x)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f(x)/(x+f(x)),x)
```

```
[Out] int(f(x)/(x+f(x)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{x + F_0(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x + F0(x)),x, algorithm="maxima")
```

```
[Out] integrate(F0(x)/(x + F0(x)), x)
```

Fricas [A] time = 0.215316, size = 4, normalized size = 0.27

Failed

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x + F0(x)),x, algorithm="fricas")
```

```
[Out] Failed
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\mathrm{F}_0(x)}{x + \mathrm{F}_0(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x+F0(x)),x)
```

```
[Out] Integral(F0(x)/(x + F0(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{x + F_0(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x + F0(x)),x, algorithm="giac")
```

```
[Out] integrate(F0(x)/(x + F0(x)), x)
```

3.746 $\int \frac{f(x)}{x^2+f(x)}\,dx$

Optimal. Leaf size=19

$$x - \text{Int}\left(\frac{x^2}{f(x) + x^2}, x\right)$$

```
[Out] x - CannotIntegrate[x^2/(x^2 + f[x]), x]
```

Rubi [A] time = 0.106251, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{f(x)}{x^2 + f(x)}, x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f[x]/(x^2 + f[x]),x]
```

```
[Out] x - Defer[Int][x^2/(x^2 + f[x]), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{x^2 + F_0(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F0(x)/(x**2+F0(x)),x)
```

```
[Out] Integral(F0(x)/(x**2 + F0(x)), x)
```

Mathematica [A] time = 0.0430832, size = 0, normalized size = 0.

$$\int \frac{f(x)}{x^2 + f(x)}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f[x]/(x^2 + f[x]),x]
```

```
[Out] Integrate[f[x]/(x^2 + f[x]), x]
```

Maple [A] time = 0.006, size = 0, normalized size = 0.

$$\int \frac{f(x)}{x^2 + f(x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f(x)/(x^2+f(x)),x)
```

```
[Out] int(f(x)/(x^2+f(x)),x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{x^2 + F_0(x)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x^2 + F0(x)),x, algorithm="maxima")
```

```
[Out] integrate(F0(x)/(x^2 + F0(x)), x)
```

Fricas [A] time = 0.217883, size = 5, normalized size = 0.26

Failed

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x^2 + F0(x)),x, algorithm="fricas")
```

```
[Out] Failed
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\mathrm{F}_0(x)}{x^2 + \mathrm{F}_0(x)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x**2+F0(x)),x)
```

```
[Out] Integral(F0(x)/(x**2 + F0(x)), x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{x^2 + F_0(x)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x^2 + F0(x)),x, algorithm="giac")
```

```
[Out] integrate(F0(x)/(x^2 + F0(x)), x)
```

3.747 $\int \frac{f(x)}{(x+f(x))^2} \, dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{f(x)+x},x\right)-\text{Int}\left(\frac{x}{(f(x)+x)^2},x\right)$$

```
[Out] -CannotIntegrate[x/(x + f[x])^2, x] + CannotIntegrate[(x + f[x])^
(-1), x]
```

Rubi [A] time = 0.0861013, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\text{Int}\left(\frac{f(x)}{(x+f(x))^2},x\right)$$

Verification is Not applicable to the result.

```
[In]  Int[f[x]/(x + f[x])^2,x]
```

```
[Out] -Defer[Int][x/(x + f[x])^2, x] + Defer[Int][(x + f[x])^(-1), x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\mathrm{F}_0(x)}{(x+\mathrm{F}_0(x))^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(F0(x)/(x+F0(x))**2,x)
```

```
[Out] Integral(F0(x)/(x + F0(x))**2, x)
```

Mathematica [A] time = 0.0193356, size = 0, normalized size = 0.

$$\int \frac{f(x)}{(x+f(x))^2} \, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f[x]/(x + f[x])^2,x]
```

```
[Out] Integrate[f[x]/(x + f[x])^2, x]
```

Maple [A] time = 0.004, size = 0, normalized size = 0.

$$\int \frac{f(x)}{(x+f(x))^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f(x)/(x+f(x))^2,x)
```

```
[Out] int(f(x)/(x+f(x))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{(x + F_0(x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x + F0(x))^2,x, algorithm="maxima")
```

```
[Out] integrate(F0(x)/(x + F0(x))^2, x)
```

Fricas [A] time = 0.218579, size = 5, normalized size = 0.22

Failed

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x + F0(x))^2,x, algorithm="fricas")
```

```
[Out] Failed
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\mathrm{F}_0(x)}{(x + \mathrm{F}_0(x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x+F0(x))**2,x)
```

```
[Out] Integral(F0(x)/(x + F0(x))**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{(x + F_0(x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x + F0(x))^2,x, algorithm="giac")
```

```
[Out] integrate(F0(x)/(x + F0(x))^2, x)
```

3.748 $\int \frac{f(x)}{(x^2+f(x))^2} \, dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{1}{f(x)+x^2},x\right)-\operatorname{Int}\left(\frac{x^2}{(f(x)+x^2)^2},x\right)$$

```
[Out] -CannotIntegrate[x^2/(x^2 + f[x])^2, x] + CannotIntegrate[(x^2 +
f[x])^(-1), x]
```

Rubi [A] time = 0.125621, antiderivative size = 0, normalized size of antiderivative = 0., number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\operatorname{Int}\left(\frac{f(x)}{(x^2+f(x))^2},x\right)$$

Verification is Not applicable to the result.

```
[In] Int[f[x]/(x^2 + f[x])^2,x]

[Out] -Defer[Int][x^2/(x^2 + f[x])^2, x] + Defer[Int][(x^2 + f[x])^(-1)
, x]
```

Rubi in Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\mathrm{F}_0(x)}{(x^2+\mathrm{F}_0(x))^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(F0(x)/(x**2+F0(x))**2,x)

[Out] Integral(F0(x)/(x**2 + F0(x))**2, x)
```

Mathematica [A] time = 0.0213032, size = 0, normalized size = 0.

$$\int \frac{f(x)}{(x^2+f(x))^2} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[f[x]/(x^2 + f[x])^2,x]

[Out] Integrate[f[x]/(x^2 + f[x])^2, x]
```

Maple [A] time = 0.004, size = 0, normalized size = 0.

$$\int \frac{f(x)}{(x^2+f(x))^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f(x)/(x^2+f(x))^2,x)

[Out] int(f(x)/(x^2+f(x))^2,x)
```

Maxima [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{(x^2 + F_0(x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x^2 + F0(x))^2,x, algorithm="maxima")

[Out] integrate(F0(x)/(x^2 + F0(x))^2, x)
```

Fricas [A] time = 0.227335, size = 32, normalized size = 1.1

Failed

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x^2 + F0(x))^2,x, algorithm="fricas")

[Out] Failed
```

Sympy [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{\mathrm{F}_0(x)}{(x^2 + \mathrm{F}_0(x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x**2+F0(x))**2,x)

[Out] Integral(F0(x)/(x**2 + F0(x))**2, x)
```

GIAC/XCAS [A] time = 0., size = 0, normalized size = 0.

$$\int \frac{F_0(x)}{(x^2 + F_0(x))^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(F0(x)/(x^2 + F0(x))^2,x, algorithm="giac")

[Out] integrate(F0(x)/(x^2 + F0(x))^2, x)
```

3.749 $\int \left(aF^{c+dx}\right)^m \left(bF^{e+fx}\right)^n \, dx$

Optimal. Leaf size=36

$$\frac{\left(aF^{c+dx}\right)^m \left(bF^{e+fx}\right)^n}{\log(F)(dm+fn)}$$

```
[Out] ((a*F^(c + d*x))^m*(b*F^(e + f*x))^n)/((d*m + f*n)*Log[F])
```

Rubi [A] time = 0.154346, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$\frac{\left(aF^{c+dx}\right)^m \left(bF^{e+fx}\right)^n}{\log(F)(dm+fn)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a*F^(c + d*x))^m*(b*F^(e + f*x))^n,x]
```

```
[Out] ((a*F^(c + d*x))^m*(b*F^(e + f*x))^n)/((d*m + f*n)*Log[F])
```

Rubi in Sympy [A] time = 16.5993, size = 73, normalized size = 2.03

$$\frac{F^{m(-c-dx)}F^{n(-e-fx)}\left(F^{c+dx}a\right)^m \left(F^{e+fx}b\right)^n e^{x(dm+fn)\log(F)+(cm+en)\log(F)}}{(dm+fn)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*F**(d*x+c))**m*(b*F**(f*x+e))**n,x)
```

```
[Out] F**(m*(-c - d*x))*F**(n*(-e - f*x))*(F**(c + d*x)*a)**m*(F**(e +
f*x)*b)**n*exp(x*(d*m + f*n)*log(F) + (c*m + e*n)*log(F))/((d*m +
 f*n)*log(F))
```

Mathematica [A] time = 0.0652596, size = 36, normalized size = 1.

$$\frac{\left(aF^{c+dx}\right)^m \left(bF^{e+fx}\right)^n}{dm\log(F)+fn\log(F)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*F^(c + d*x))^m*(b*F^(e + f*x))^n,x]
```

```
[Out] ((a*F^(c + d*x))^m*(b*F^(e + f*x))^n)/(d*m*Log[F] + f*n*Log[F])
```

Maple [A] time = 0.009, size = 37, normalized size = 1.

$$\frac{\left(aF^{dx+c}\right)^m \left(bF^{fx+e}\right)^n}{\ln(F)(md+fn)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*F^(d*x+c))^m*(b*F^(f*x+e))^n,x)
```

```
[Out] (a*F^(d*x+c))^m*(b*F^(f*x+e))^n/(d*m+f*n)/ln(F)
```

Maxima [A] time = 0.809535, size = 88, normalized size = 2.44

$$\frac{(F^e)^n a^m b^n e^{\left(m\log\left(F^{dx+c}\right)+n\log\left(\left(F^{dx+c}\right)^{\frac{f}{d}}\right)\right)}}{(dm+fn)\left(F^{\frac{cf}{d}}\right)^n\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*a)^m*(F^(f*x + e)*b)^n,x, algorithm="maxima")
```

```
[Out] (F^e)^n*a^m*b^n*e^(m*log(F^(d*x + c)) + n*log((F^(d*x + c))^(f/d)
))/((d*m + f*n)*(F^(c*f/d))^n*log(F))
```

Fricas [A] time = 0.266936, size = 62, normalized size = 1.72

$$\frac{e^{((dmx+cm)\log(F)+(fnx+en)\log(F)+m\log(a)+n\log(b))}}{(dm+fn)\log(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*a)^m*(F^(f*x + e)*b)^n,x, algorithm="fricas")
```

```
[Out] e^((d*m*x + c*m)*log(F) + (f*n*x + e*n)*log(F) + m*log(a) + n*log
(b))/((d*m + f*n)*log(F))
```

Sympy [A] time = 104.7, size = 100, normalized size = 2.78

$$\begin{cases} a^m b^n x & \text{for } F = 1 \wedge \left(F = 1 \vee d = -\frac{fn}{m}\right) \\ a^m b^n x \left(F^c\right)^m \left(F^e\right)^n \left(F^{fx}\right)^n \left(F^{-\frac{fnx}{m}}\right)^m & \text{for } d = -\frac{fn}{m} \\ \frac{a^m b^n (F^c)^m (F^e)^n \left(F^{dx}\right)^m \left(F^{fx}\right)^n}{dm\log(F)+fn\log(F)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*F**(d*x+c))**m*(b*F**(f*x+e))**n,x)
```

```
[Out] Piecewise((a**m*b**n*x, Eq(F, 1) & (Eq(F, 1) | Eq(d, -f*n/m))), (
a**m*b**n*x*(F**c)**m*(F**e)**n*(F**(f*x))**n*(F**(-f*n*x/m))**m,
 Eq(d, -f*n/m)), (a**m*b**n*(F**c)**m*(F**e)**n*(F**(d*x))**m*(F*
*(f*x))**n/(d*m*log(F) + f*n*log(F)), True))
```

GIAC/XCAS [A] time = 1.74042, size = 63, normalized size = 1.75

$$\frac{e^{(dmx\ln(F)+fnx\ln(F)+cm\ln(F)+ne\ln(F)+m\ln(a)+n\ln(b))}}{dm\ln(F)+fn\ln(F)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((F^(d*x + c)*a)^m*(F^(f*x + e)*b)^n,x, algorithm="giac")
```

```
[Out] e^(d*m*x*ln(F) + f*n*x*ln(F) + c*m*ln(F) + n*e*ln(F) + m*ln(a) +
n*ln(b))/(d*m*ln(F) + f*n*ln(F))
```

3.750 $\int e^{a+c+bx^n+dx^n}\,dx$

Optimal. Leaf size=37

$$-\frac{xe^{a+c}\left(-(b+d)x^n\right)^{-1/n}\,\mathrm{Gamma}\left(\frac{1}{n},-(b+d)x^n\right)}{n}$$

```
[Out] -((E^(a + c)*x*Gamma[n^(-1), -((b + d)*x^n)])/(n*(-((b + d)*x^n))
^n^(-1)))
```

Rubi [A] time = 0.0629906, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{xe^{a+c}\left(-(b+d)x^n\right)^{-1/n}\,\mathrm{Gamma}\left(\frac{1}{n},-(b+d)x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + c + b*x^n + d*x^n),x]
```

```
[Out] -((E^(a + c)*x*Gamma[n^(-1), -((b + d)*x^n)])/(n*(-((b + d)*x^n))
^n^(-1)))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int e^{a+bx^n+c+dx^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(a+c+b*x**n+d*x**n),x)
```

```
[Out] Integral(exp(a + b*x**n + c + d*x**n), x)
```

Mathematica [A] time = 0.021157, size = 0, normalized size = 0.

$$\int e^{a+c+bx^n+dx^n}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a + c + b*x^n + d*x^n),x]
```

```
[Out] Integrate[E^(a + c + b*x^n + d*x^n), x]
```

Maple [C] time = 0.05, size = 241, normalized size = 6.5

$$\frac{e^{a+c}}{n}(-b-d)^{-n^{-1}}\left(\frac{n^2x^{-n+1}(-b-d)^{n^{-1}-1}(nx^n(-b-d)+n+1)}{(1+n)(1+2n)}(x^n(-b-d))^{-\frac{1+n}{2n}}e^{-\frac{x^n(-b-d)}{2}}M_{n^{-1}-\frac{1+n}{2n},\,\frac{1+n}{2n}+\frac{1}{2}}(x^n(-b-d))+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(a+c+b*x^n+d*x^n),x)
```

```
[Out] exp(a+c)/n*(-b-d)^(-1/n)*(n^2*x^(-n+1)*(-b-d)^(1/n-1)*(n*x^n*(-b-
d)+n+1)/(1+n)/(1+2*n)*(x^n*(-b-d))^(-1/2*(1+n)/n)*exp(-1/2*x^n*(-
b-d))*WhittakerM(1/n-1/2*(1+n)/n,1/2*(1+n)/n+1/2,x^n*(-b-d))+n*x^
(-n+1)*(-b-d)^(1/n-1)*(1+n)/(1+2*n)*(x^n*(-b-d))^(-1/2*(1+n)/n)*e
xp(-1/2*x^n*(-b-d))*WhittakerM(1/n-1/2*(1+n)/n+1,1/2*(1+n)/n+1/2,
x^n*(-b-d)))
```

Maxima [A] time = 1.06941, size = 49, normalized size = 1.32

$$-\frac{xe^{(a+c)}\left(\frac{1}{n}, -(b+d)x^n\right)}{\left(-(b+d)x^n\right)^{\left(\frac{1}{n}\right)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(b*x^n + d*x^n + a + c),x, algorithm="maxima")
```

```
[Out] -x*e^(a + c)*gamma(1/n, -(b + d)*x^n)/((-(b + d)*x^n)^(1/n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(e^{\left((b+d)x^n+a+c\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(b*x^n + d*x^n + a + c),x, algorithm="fricas")
```

```
[Out] integral(e^((b + d)*x^n + a + c), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$e^a e^c \int e^{bx^n} e^{dx^n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(a+c+b*x**n+d*x**n),x)
```

```
[Out] exp(a)*exp(c)*Integral(exp(b*x**n)*exp(d*x**n), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int e^{\left(bx^n+dx^n+a+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(e^(b*x^n + d*x^n + a + c),x, algorithm="giac")
```

```
[Out] integrate(e^(b*x^n + d*x^n + a + c), x)
```

3.751 $\int f^{a+bx^n} g^{c+dx^n}\,dx$

Optimal. Leaf size=50

$$-\frac{x f^a g^c\left(-x^n(b\log(f)+d\log(g))\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-x^n(b\log(f)+d\log(g))\right)}{n}$$

```
[Out] -((f^a*g^c*x*Gamma[n^(-1), -(x^n*(b*Log[f] + d*Log[g]))])/(n*(-(x
^n*(b*Log[f] + d*Log[g])))^n^(-1)))
```

Rubi [A] time = 0.076897, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{x f^a g^c\left(-x^n(b\log(f)+d\log(g))\right)^{-1/n}\text{Gamma}\left(\frac{1}{n},-x^n(b\log(f)+d\log(g))\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x^n)*g^(c + d*x^n),x]
```

```
[Out] -((f^a*g^c*x*Gamma[n^(-1), -(x^n*(b*Log[f] + d*Log[g]))])/(n*(-(x
^n*(b*Log[f] + d*Log[g])))^n^(-1)))
```

Rubi in Sympy [A] time = 4.37221, size = 53, normalized size = 1.06

$$-\frac{x\left(x^n\left(-b\log(f)-d\log(g)\right)\right)^{-\frac{1}{n}}\left(\frac{1}{n},x^n\left(-b\log(f)-d\log(g)\right)\right)e^{a\log(f)+c\log(g)}}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(a+b*x**n)*g**(c+d*x**n),x)
```

```
[Out] -x*(x**n*(-b*log(f) - d*log(g)))**(-1/n)*Gamma(1/n, x**n*(-b*log(
f) - d*log(g)))*exp(a*log(f) + c*log(g))/n
```

Mathematica [A] time = 0.054879, size = 0, normalized size = 0.

$$\int f^{a+bx^n} g^{c+dx^n}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x^n)*g^(c + d*x^n),x]
```

```
[Out] Integrate[f^(a + b*x^n)*g^(c + d*x^n), x]
```

Maple [F] time = 0.117, size = 0, normalized size = 0.

$$\int f^{a+bx^n} g^{c+dx^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(a+b*x^n)*g^(c+d*x^n),x)
```

```
[Out] int(f^(a+b*x^n)*g^(c+d*x^n),x)
```

Maxima [A] time = 1.01942, size = 68, normalized size = 1.36

$$-\frac{f^a g^c x \left(\frac{1}{n}, -(b\log(f) + d\log(g))x^n\right)}{\left(-(b\log(f) + d\log(g))x^n\right)^{\left(\frac{1}{n}\right)} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*g^(d*x^n + c),x, algorithm="maxima")
```

```
[Out] -f^a*g^c*x*gamma(1/n, -(b*log(f) + d*log(g))*x^n)/((-(b*log(f) +
d*log(g))*x^n)^(1/n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{bx^n+a}g^{dx^n+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*g^(d*x^n + c),x, algorithm="fricas")
```

```
[Out] integral(f^(b*x^n + a)*g^(d*x^n + c), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(a+b*x**n)*g**(c+d*x**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{bx^n+a}g^{dx^n+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(b*x^n + a)*g^(d*x^n + c),x, algorithm="giac")
```

```
[Out] integrate(f^(b*x^n + a)*g^(d*x^n + c), x)
```

3.752 $\int e^{x^n} x^m \, dx$

Optimal. Leaf size=37

$$-\frac{x^{m+1}(-x^n)^{-\frac{m+1}{n}}\operatorname{Gamma}\left(\frac{m+1}{n},-x^n\right)}{n}$$

```
[Out] -((x^(1 + m)*Gamma[(1 + m)/n, -x^n])/(n*(-x^n)^((1 + m)/n)))
```

Rubi [A] time = 0.030161, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{x^{m+1}(-x^n)^{-\frac{m+1}{n}}\operatorname{Gamma}\left(\frac{m+1}{n},-x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[E^x^n*x^m,x]
```

```
[Out] -((x^(1 + m)*Gamma[(1 + m)/n, -x^n])/(n*(-x^n)^((1 + m)/n)))
```

Rubi in Sympy [A] time = 3.61416, size = 27, normalized size = 0.73

$$-\frac{x^{m+1}(-x^n)^{-\frac{m+1}{n}}\left(\frac{m+1}{n},-x^n\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp(x**n)*x**m,x)
```

```
[Out] -x**(m + 1)*(-x**n)**(-(m + 1)/n)*Gamma((m + 1)/n, -x**n)/n
```

Mathematica [A] time = 0.0244752, size = 37, normalized size = 1.

$$-\frac{x^{m+1}(-x^n)^{-\frac{m+1}{n}}\operatorname{Gamma}\left(\frac{m+1}{n},-x^n\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[E^x^n*x^m,x]
```

```
[Out] -((x^(1 + m)*Gamma[(1 + m)/n, -x^n])/(n*(-x^n)^((1 + m)/n)))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int e^{x^n} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp(x^n)*x^m,x)
```

```
[Out] int(exp(x^n)*x^m,x)
```

Maxima [A] time = 0.954113, size = 51, normalized size = 1.38

$$-\frac{x^{m+1}\,\Gamma\left(\frac{m+1}{n}, -x^n\right)}{n\left(-x^n\right)^{\frac{m+1}{n}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m*e^(x^n),x, algorithm="maxima")
```

```
[Out] -x^(m + 1)*gamma((m + 1)/n, -x^n)/(n*(-x^n)^((m + 1)/n))
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(x^m e^{(x^n)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m*e^(x^n),x, algorithm="fricas")
```

```
[Out] integral(x^m*e^(x^n), x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp(x**n)*x**m,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int x^m e^{(x^n)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m*e^(x^n),x, algorithm="giac")
```

```
[Out] integrate(x^m*e^(x^n), x)
```

3.753 $\int f^{x^n} x^m \, dx$

Optimal. Leaf size=41

$$-\frac{x^{m+1}(\log(f)(-x^n))^{-\frac{m+1}{n}}\,\text{Gamma}\left(\frac{m+1}{n},\log(f)(-x^n)\right)}{n}$$

```
[Out] -((x^(1 + m)*Gamma[(1 + m)/n, -(x^n*Log[f])])/(n*(-(x^n*Log[f]))^
((1 + m)/n)))
```

Rubi [A] time = 0.0294573, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{x^{m+1}(\log(f)(-x^n))^{-\frac{m+1}{n}}\,\text{Gamma}\left(\frac{m+1}{n},\log(f)(-x^n)\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[f^x^n*x^m,x]
```

```
[Out] -((x^(1 + m)*Gamma[(1 + m)/n, -(x^n*Log[f])])/(n*(-(x^n*Log[f]))^
((1 + m)/n)))
```

Rubi in Sympy [A] time = 3.70719, size = 34, normalized size = 0.83

$$-\frac{x^{m+1}(-x^n\log(f))^{-\frac{m+1}{n}}\left(\frac{m+1}{n},-x^n\log(f)\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**(x**n)*x**m,x)
```

```
[Out] -x**(m + 1)*(-x**n*log(f))**(-(m + 1)/n)*Gamma((m + 1)/n, -x**n*l
og(f))/n
```

Mathematica [A] time = 0.0256098, size = 41, normalized size = 1.

$$-\frac{x^{m+1}(\log(f)(-x^n))^{-\frac{m+1}{n}}\,\text{Gamma}\left(\frac{m+1}{n},\log(f)(-x^n)\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[f^x^n*x^m,x]
```

```
[Out] -((x^(1 + m)*Gamma[(1 + m)/n, -(x^n*Log[f])])/(n*(-(x^n*Log[f]))^
((1 + m)/n)))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int f^{x^n} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^(x^n)*x^m,x)
```

```
[Out] int(f^(x^n)*x^m,x)
```

Maxima [A] time = 0.986549, size = 57, normalized size = 1.39

$$-\frac{x^{m+1}\left(\frac{m+1}{n}, -x^n \log(f)\right)}{\left(-x^n \log(f)\right)^{\frac{m+1}{n}} n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(x^n)*x^m,x, algorithm="maxima")
```

```
[Out] -x^(m + 1)*gamma((m + 1)/n, -x^n*log(f))/((-x^n*log(f))^((m + 1)/
n)*n)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(f^{(x^n)} x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(x^n)*x^m,x, algorithm="fricas")
```

```
[Out] integral(f^(x^n)*x^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int f^{x^n} x^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**(x**n)*x**m,x)
```

```
[Out] Integral(f**(x**n)*x**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(x^n)} x^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f^(x^n)*x^m,x, algorithm="giac")
```

```
[Out] integrate(f^(x^n)*x^m, x)
```

3.754 $\int e^{(a+bx)^n}(a+bx)^m\,dx$

Optimal. Leaf size=52

$$-\frac{(a+bx)^{m+1}\left(-(a+bx)^n\right)^{-\frac{m+1}{n}}\,\text{Gamma}\left(\frac{m+1}{n},-(a+bx)^n\right)}{bn}$$

```
[Out] -(((a + b*x)^(1 + m)*Gamma[(1 + m)/n, -(a + b*x)^n])/(b*n*(-(a +
b*x)^n)^((1 + m)/n)))
```

Rubi [A] time = 0.0469261, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{(a+bx)^{m+1}\left(-(a+bx)^n\right)^{-\frac{m+1}{n}}\,\text{Gamma}\left(\frac{m+1}{n},-(a+bx)^n\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x)^n*(a + b*x)^m,x]
```

```
[Out] -(((a + b*x)^(1 + m)*Gamma[(1 + m)/n, -(a + b*x)^n])/(b*n*(-(a +
b*x)^n)^((1 + m)/n)))
```

Rubi in Sympy [A] time = 6.17518, size = 39, normalized size = 0.75

$$-\frac{\left(-\left(a+bx\right)^n\right)^{-\frac{m+1}{n}}\left(a+bx\right)^{m+1}\left(\frac{m+1}{n},-\left(a+bx\right)^n\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)**n)*(b*x+a)**m,x)
```

```
[Out] -(-(a + b*x)**n)**(-(m + 1)/n)*(a + b*x)**(m + 1)*Gamma((m + 1)/n
, -(a + b*x)**n)/(b*n)
```

Mathematica [A] time = 0.0494121, size = 0, normalized size = 0.

$$\int e^{(a+bx)^n}(a+bx)^m\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a + b*x)^n*(a + b*x)^m,x]
```

```
[Out] Integrate[E^(a + b*x)^n*(a + b*x)^m, x]
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int e^{(bx+a)^n}\,(bx+a)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((b*x+a)^n)*(b*x+a)^m,x)

[Out] int(exp((b*x+a)^n)*(b*x+a)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m e^{\left((bx+a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*e^((b*x + a)^n),x, algorithm="maxima")

[Out] integrate((b*x + a)^m*e^((b*x + a)^n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^m e^{\left((bx+a)^n\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*e^((b*x + a)^n),x, algorithm="fricas")

[Out] integral((b*x + a)^m*e^((b*x + a)^n), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^m e^{(a+bx)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)**n)*(b*x+a)**m,x)

[Out] Integral((a + b*x)**m*exp((a + b*x)**n), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m e^{\left((bx+a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*e^((b*x + a)^n),x, algorithm="giac")

[Out] integrate((b*x + a)^m*e^((b*x + a)^n), x)
```

3.755 $\int f^{(a+bx)^n}(a+bx)^m\,dx$

Optimal. Leaf size=56

$$-\frac{(a+bx)^{m+1}\left(\log(f)\left(-(a+bx)^n\right)\right)^{-\frac{m+1}{n}}\operatorname{Gamma}\left(\frac{m+1}{n},\log(f)\left(-(a+bx)^n\right)\right)}{bn}$$

```
[Out] -(((a + b*x)^(1 + m)*Gamma[(1 + m)/n, -((a + b*x)^n*Log[f])])/(b*
n*(-((a + b*x)^n*Log[f]))^((1 + m)/n)))
```

Rubi [A] time = 0.0470727, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{(a+bx)^{m+1}\left(\log(f)\left(-(a+bx)^n\right)\right)^{-\frac{m+1}{n}}\operatorname{Gamma}\left(\frac{m+1}{n},\log(f)\left(-(a+bx)^n\right)\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Int[f^(a + b*x)^n*(a + b*x)^m,x]
```

```
[Out] -(((a + b*x)^(1 + m)*Gamma[(1 + m)/n, -((a + b*x)^n*Log[f])])/(b*
n*(-((a + b*x)^n*Log[f]))^((1 + m)/n)))
```

Rubi in Sympy [A] time = 6.28196, size = 46, normalized size = 0.82

$$-\frac{\left(-(a+bx)^n\log(f)\right)^{-\frac{m+1}{n}}(a+bx)^{m+1}\left(\frac{m+1}{n},-(a+bx)^n\log(f)\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(f**((b*x+a)**n)*(b*x+a)**m,x)
```

```
[Out] -(-(a + b*x)**n*log(f))**(-(m + 1)/n)*(a + b*x)**(m + 1)*Gamma((m
 + 1)/n, -(a + b*x)**n*log(f))/(b*n)
```

Mathematica [A] time = 0.0558918, size = 0, normalized size = 0.

$$\int f^{(a+bx)^n}(a+bx)^m\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[f^(a + b*x)^n*(a + b*x)^m,x]
```

```
[Out] Integrate[f^(a + b*x)^n*(a + b*x)^m, x]
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int f^{(bx+a)^n}(bx+a)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(f^((b*x+a)^n)*(b*x+a)^m,x)
```

```
[Out] int(f^((b*x+a)^n)*(b*x+a)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m f^{\left((bx+a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*f^((b*x + a)^n),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m*f^((b*x + a)^n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^m f^{\left((bx+a)^n\right)}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*f^((b*x + a)^n),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m*f^((b*x + a)^n), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int f^{(a+bx)^n}\,(a+bx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(f**((b*x+a)**n)*(b*x+a)**m,x)
```

```
[Out] Integral(f**((a + b*x)**n)*(a + b*x)**m, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m f^{\left((bx+a)^n\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*f^((b*x + a)^n),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m*f^((b*x + a)^n), x)
```

3.756 $\int e^{(a+bx)^3} x\,dx$

Optimal. Leaf size=80

$$\frac{a(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^2\sqrt[3]{-(a+bx)^3}}-\frac{(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^2\left(-(a+bx)^3\right)^{2/3}}$$

```
[Out] (a*(a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)^(1/3
)) - ((a + b*x)^2*Gamma[2/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)
^(2/3))
```

Rubi [A] time = 0.0795241, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\frac{a(a+bx)\text{Gamma}\left(\frac{1}{3},-(a+bx)^3\right)}{3b^2\sqrt[3]{-(a+bx)^3}}-\frac{(a+bx)^2\text{Gamma}\left(\frac{2}{3},-(a+bx)^3\right)}{3b^2\left(-(a+bx)^3\right)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[E^(a + b*x)^3*x,x]
```

```
[Out] (a*(a + b*x)*Gamma[1/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)^(1/3
)) - ((a + b*x)^2*Gamma[2/3, -(a + b*x)^3])/(3*b^2*(-(a + b*x)^3)
^(2/3))
```

Rubi in Sympy [A] time = 8.10108, size = 70, normalized size = 0.88

$$\frac{a\left(a+bx\right)\left(\frac{1}{3},-\left(a+bx\right)^3\right)}{3b^2\sqrt[3]{-\left(a+bx\right)^3}}-\frac{\left(a+bx\right)^2\left(\frac{2}{3},-\left(a+bx\right)^3\right)}{3b^2\left(-\left(a+bx\right)^3\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(exp((b*x+a)**3)*x,x)
```

```
[Out] a*(a + b*x)*Gamma(1/3, -(a + b*x)**3)/(3*b**2*(-(a + b*x)**3)**(1
/3)) - (a + b*x)**2*Gamma(2/3, -(a + b*x)**3)/(3*b**2*(-(a + b*x)
**3)**(2/3))
```

Mathematica [A] time = 0.26031, size = 0, normalized size = 0.

$$\int e^{(a+bx)^3}x\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[E^(a + b*x)^3*x,x]
```

```
[Out] Integrate[E^(a + b*x)^3*x, x]
```

Maple [F] time = 0.018, size = 0, normalized size = 0.

$$\int e^{(bx+a)^3}x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(exp((b*x+a)^3)*x,x)
```

```
[Out] int(exp((b*x+a)^3)*x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left((bx+a)^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^((b*x + a)^3),x, algorithm="maxima")
```

```
[Out] integrate(x*e^((b*x + a)^3), x)
```

Fricas [A] time = 0.256183, size = 120, normalized size = 1.5

$$\frac{\left(-b^3\right)^{\frac{1}{3}} a\, \Gamma\left(\frac{1}{3}, -b^3x^3 - 3\,ab^2x^2 - 3\,a^2bx - a^3\right) - b\, \Gamma\left(\frac{2}{3}, -b^3x^3 - 3\,ab^2x^2 - 3\,a^2bx - a^3\right)}{3\,\left(-b^3\right)^{\frac{2}{3}} b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^((b*x + a)^3),x, algorithm="fricas")
```

```
[Out] 1/3*((-b^3)^(1/3)*a*gamma(1/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*b*x
 - a^3) - b*gamma(2/3, -b^3*x^3 - 3*a*b^2*x^2 - 3*a^2*b*x - a^3))
/((-b^3)^(2/3)*b)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(exp((b*x+a)**3)*x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int xe^{\left((bx+a)^3\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*e^((b*x + a)^3),x, algorithm="giac")
```

```
[Out] integrate(x*e^((b*x + a)^3), x)
```

3.757 $\int \frac{5x^2+3\sqrt[3]{e^x+x}+e^x(3x+2x^2)}{x\sqrt[3]{e^x+x}}\,dx$

Optimal. Leaf size=17

$$3\left(x+e^x\right)^{2/3}x+3\log(x)$$

```
[Out] 3*x*(E^x + x)^(2/3) + 3*Log[x]
```

Rubi [A] time = 0.982978, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$

$$3\left(x+e^x\right)^{2/3}x+3\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[(5*x^2 + 3*(E^x + x)^(1/3) + E^x*(3*x + 2*x^2))/(x*(E^x + x)^(1/3)),x]
```

```
[Out] 3*x*(E^x + x)^(2/3) + 3*Log[x]
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((5*x**2+3*(exp(x)+x)**(1/3)+exp(x)*(2*x**2+3*x))/x/(exp(x)+x)**
```

```
[Out] Timed out
```

Mathematica [A] time = 0.0856994, size = 17, normalized size = 1.

$$3\left(x+e^x\right)^{2/3}x+3\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5*x^2 + 3*(E^x + x)^(1/3) + E^x*(3*x + 2*x^2))/(x*(E^x + x)^(1/3)),x]
```

```
[Out] 3*x*(E^x + x)^(2/3) + 3*Log[x]
```

Maple [F] time = 0.007, size = 0, normalized size = 0.

$$\int \frac{1}{x}\left(5\,x^2+3\,\sqrt[3]{e^x+x}+e^x\left(2\,x^2+3\,x\right)\right)\frac{1}{\sqrt[3]{e^x+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5*x^2+3*(exp(x)+x)^(1/3)+exp(x)*(2*x^2+3*x))/x/(exp(x)+x)^(1/3),x)
```

```
[Out] int((5*x^2+3*(exp(x)+x)^(1/3)+exp(x)*(2*x^2+3*x))/x/(exp(x)+x)^(1
/3),x)
```

Maxima [A] time = 0.848305, size = 28, normalized size = 1.65

$$\frac{3\left(x^{2}+xe^{x}\right)}{\left(x+e^{x}\right)^{\frac{1}{3}}}+3\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x^2 + (2*x^2 + 3*x)*e^x + 3*(x + e^x)^(1/3))/((x + e^x)^(1/3)*x),x, a
```

```
[Out] 3*(x^2 + x*e^x)/(x + e^x)^(1/3) + 3*log(x)
```

Fricas [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x^2 + (2*x^2 + 3*x)*e^x + 3*(x + e^x)^(1/3))/((x + e^x)^(1/3)*x),x, a
```

```
[Out] Exception raised: TypeError
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{2x^{2}e^{x}+5x^{2}+3xe^{x}+3\sqrt[3]{x+e^{x}}}{x\sqrt[3]{x+e^{x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x**2+3*(exp(x)+x)**(1/3)+exp(x)*(2*x**2+3*x))/x/(exp(x)+x)**(1/3)
```

```
[Out] Integral((2*x**2*exp(x) + 5*x**2 + 3*x*exp(x) + 3*(x + exp(x))**(
1/3))/(x*(x + exp(x))**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{5\,x^{2}+\left(2\,x^{2}+3\,x\right)e^{x}+3\,\left(x+e^{x}\right)^{\frac{1}{3}}}{\left(x+e^{x}\right)^{\frac{1}{3}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5*x^2 + (2*x^2 + 3*x)*e^x + 3*(x + e^x)^(1/3))/((x + e^x)^(1/3)*x),x, a
```

```
[Out] integrate((5*x^2 + (2*x^2 + 3*x)*e^x + 3*(x + e^x)^(1/3))/((x + e
^x)^(1/3)*x), x)
```

4 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Mathematica/Rubi followed by one for Maple. The following are links to the source code.

The following are the listing of the above functions.

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)
(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)

(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)

GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]

(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)
```

```
ExpnType[expn_] :=
  If[AtomQ[expn], 1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]
```

```
ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]

SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]
HypergeometricFunctionQ[func_] := MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
AppellFunctionQ[func_] := MemberQ[{AppellF1},func]
```

```
# File: GradeAntiderivative.mpl Original version thanks to Albert Rich emailed on 03/21/2017
#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);
  #This check below actually is not needed, since I only call this grading only for
  #passed integrals. i.e. I check for "F" before calling this.

  if not type(result,freeof('int')) then
     return "F";
  end if;

  if ExpnType_result<=ExpnType_optimal then
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
         if leaf_count_result<=2*leaf_count_optimal then
            return "A";
         else
            return "B";
         end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      return "C";
  end if
end proc:
```

```
# is_contains_complex(result) takes expressions and returns true if it contains "I"
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
      1 else
    max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
        1 else
      max(2,ExpnType(op(1,expn))) end if else
    max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' or op(0,expn)='integrate' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:
```

```
ElementaryFunctionQ := proc(func)
  member(func,[exp,log,ln, sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[erf,erfc,erfi,FresnelS,FresnelC,Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
    op(2,u) else
  apply(op(0,u),op(2..nops(u),u))
  end if
end proc:
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```